IMPROVED HIPOWERS improve track

- All rolling stock comes in frequently to terminals and repair shops. Track and track equipment cannot come in, and so is under constant on the site inspection throughout the year for necessary repairs.

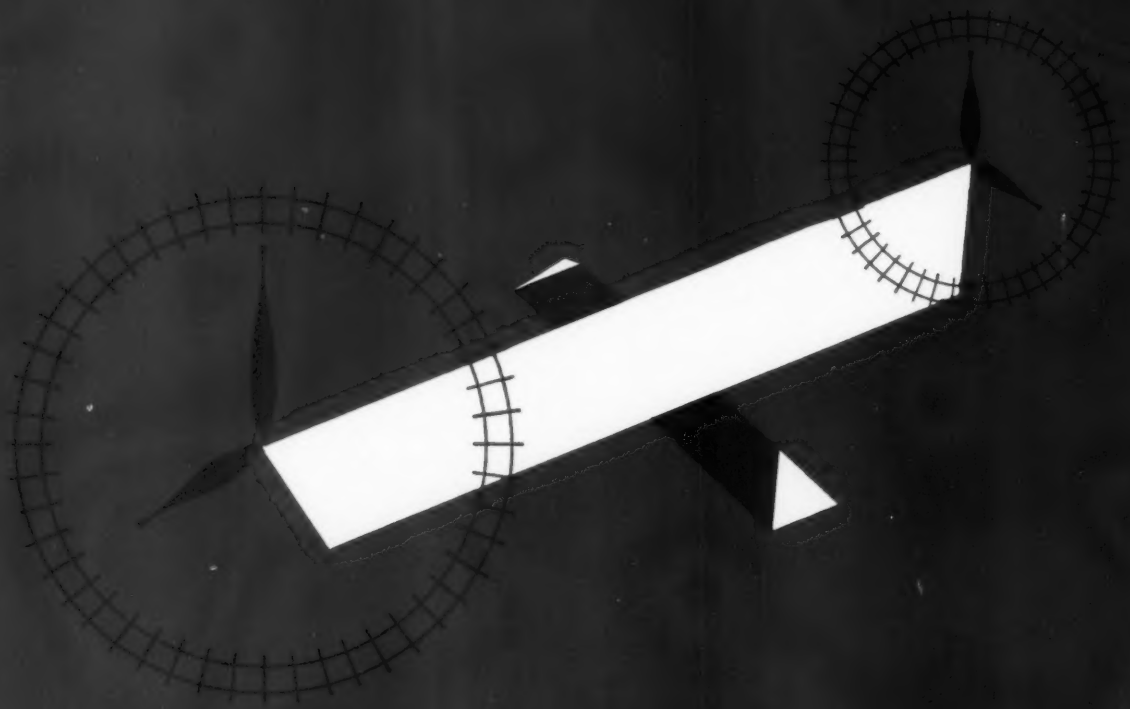
  One factor that greatly reduces the frequency of needed repairs and the cost thereof is the use of powerful spring washers. These great springs insure resilient joints, equalize bolt tensions, absorb shocks and stresses, protect rail ends and joints.

Union Pacific Phot

THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

Let Reliance **HY-CROME** *Spring Washers help you*



increase time between Track Joint Maintenance Periods

Lengthening the time between periodic tightening of rail joint bolts reduces the cost of maintaining track.

Reliance Hy-Crome Spring Washers are a product of the combined engineering experience of Eaton-Reliance fastening engineers, railroad track engineers and modern manufacturing methods.

To keep track joints tighter longer, a spring washer with adequate non-fatiguing reactive pressures had to be developed. Reliance Xtra-hy Hy-Crome Spring Washers were specifically developed to meet and exceed the 1948 A. R. E. A. Specifications.

Manufactured from special alloy spring steel of correctly engineered section sizes, their inherent reactive pressure over a wide reactive range is able to automatically compensate for developed looseness in the rail joint assembly and to keep it **tighter longer.**

A trial will convince you. Write now for Reliance Hy-Crome Spring Washer Folder R53.

"Edgemark of Quality"

RELIANCE DIVISION EATON MANUFACTURING COMPANY

OFFICE and PLANTS: 601 Charles Ave. S.E., MASSILLON, OHIO

Special Steels Spring Lock Washers Hoz-Fas-Ners

SALES OFFICES: New York • Cleveland • Detroit • Chicago • St. Louis • San Francisco • Montreal

This is Bethlehem's Model 53

It's an easy-working stand with the leverage needed for heavy throws

Not long ago, we were watching some yard men throw heavy switches with Bethlehem 53 Switch Stands.

"Nothing to it," one of them grinned. "Easy. Just squirt a little oil into 'em once in a while."

That's about all there is to keeping the 53 in working order. Give it a little oil once in a while. Then it easily develops its full power, so that throwing a heavy switch is no trick at all.

One reason is the Model 53's extreme simplicity. The mechanism has only three moving parts. This is a stand with Bethlehem's sliding-block-and-crank device, in which a machined steel block travels through an arc of 180 deg and passes the force of its movement along to the spindle. Rotating smoothly, the spindle shifts the crank, and the switch points respond.

The 53 is a husky, durable stand used for both main-line and heavy yard duty. Over the years thousands have been put into service, and some are real veterans by now, but still going strong. Full details and a demonstration upon request.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

★ BETHLEHEM STEEL ★

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.50). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 49, No. 11.

Athey HILOADER High Balls ROAD MATERIALS

The high-production HiLoader empties the 15-car train of 70-yard, drop-end gondolas in less than four hours. The swiveling conveyor allows the operator to place material where needed.

This application is only one of the many ways that the HiLoader can save maintenance money. The DL&W also uses the versatile tool for track-cleaning, stockpile loading.

Lack of access roads, along a busy 3-mile section of track through a marshy area near Union, New Jersey, made track and pole maintenance difficult for the Delaware, Lackawanna & Western Railroad. A road had to be built.

An "off-track" contract for the work meant excessive costs. Building the road with work crews meant many men and machines. *The DL&W solved its problem with a single Athey HiLoader.*

A 15-car train of 70-yard drop-end gondolas was loaded with road material at a storage yard. Then the train, with the standard Athey HiLoader in the front end of the first car, moved to the work site during a slack traffic period. As the train slowed down at the construction area, the HiLoader worked its way thru the entire train, casting material 25-feet from the track, to raise the grade two or three feet. Each 70-yard car was emptied in 16 minutes — the HiLoader moved from car to car over 4" x 12" planks. A bulldozer leveled the roadbed.

The train crew and three operators were the only manpower on the job. The HiLoader and Bulldozer were all that were needed to build the "inaccessible" access road.

The success of this road building project has led the DL&W to plan other access roads using the Athey HiLoader method. Eroded shoulders and ballast will also be handled in this way. In the winter, the versatile HiLoader will be equipped with tunnels to clean the full length of ties in a single pass at various yards.

The DL&W is one of many roads that have found the Force-Feed HiLoader the machine for many maintenance problems. You, too, will show major savings from the HiLoader's versatility and productive capacity. If you'd like to hear more about the Athey HiLoader and see one at work, contact your nearby Athey-Caterpillar Dealer, or write for special Track Cleaner booklet telling how the Athey Track Cleaner saves money for other railroads.

Athey
PRODUCTS CORPORATION
5631 WEST 65th STREET
CHICAGO 38, ILLINOIS

DIGGING PROBLEMS

are not the only problems!

Northwest Crawlers get you there and back!

That job you're on now? No problems perhaps, but what of tomorrow?

That's the thing about Northwests! They meet the daily, unexpected problems that every job presents.

Take Northwest Crawlers! They have proved themselves over miles of travel. Where there are grades to climb, streams to ford or rough going to negotiate, your Northwest gets you there—and back.

Steering is smooth and the larger Northwests bring you positive traction on both crawlers while turning as well as when going straight ahead.

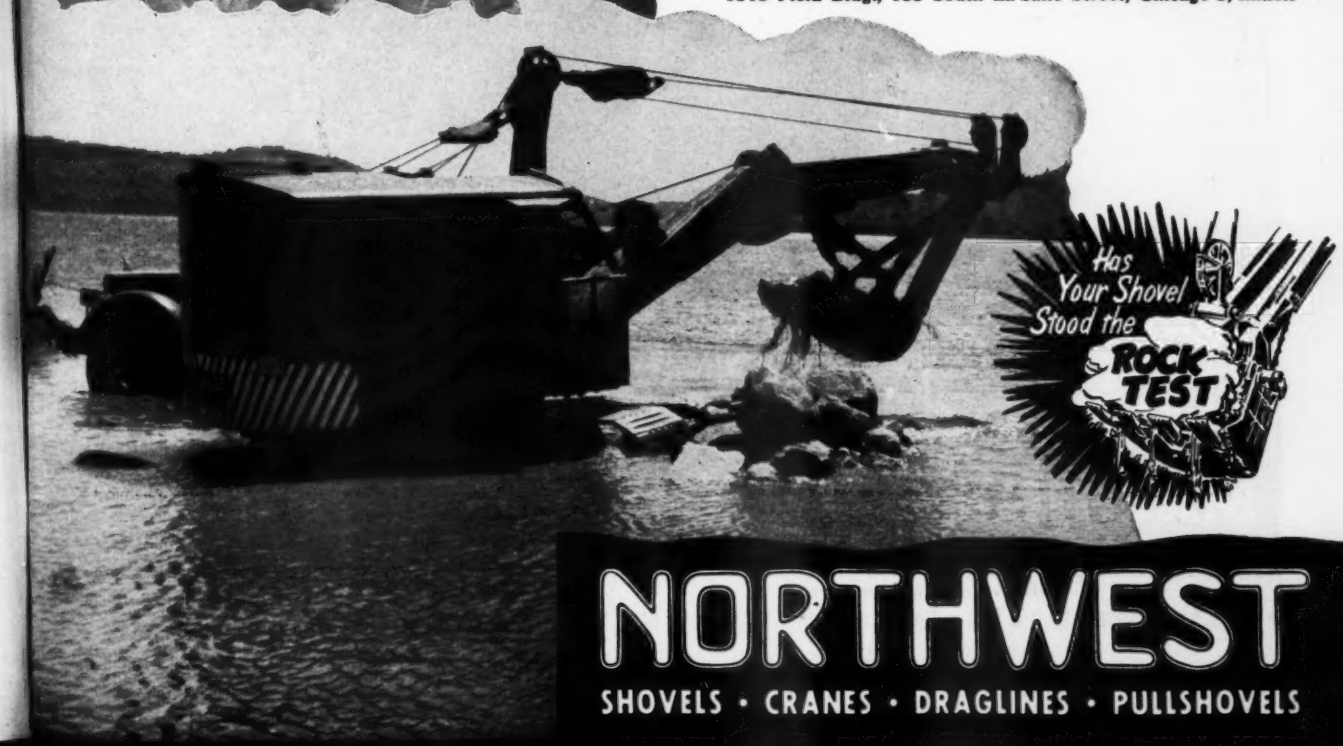
As a Shovel it is a *real* Rock Shovel utilizing force most other shovels waste. Built for hard digging, it assures higher output than most other machines where the going is easy.

Your Northwest is easy to put on the job. It loads and unloads under its own power on standard flatcars—or it is easily moved by trailer to new locations.

Convertibility from Shovel to Crane or Dragline in the field assures the greatest possible efficiency and economy for the job. Booms are easily changed.

Northwest ability to meet unusual conditions in stride means money saved. Ask for details about the size machine you require.

NORTHWEST ENGINEERING COMPANY
1513 Field Bldg., 135 South La Salle Street, Chicago 3, Illinois



NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

FASTER, RAIL JOINT MAINTENANCE AT LOWER COST, WITH THE WOOLERY POWER BOLT TIGHTENER

HERE'S THE ANSWER to *fast*, periodic maintenance of rail joints! The *Woolery* Power Bolt Tightener assures uniform tightness to every bolt through *automatic torque release*. Chuck rotation can be reversed immediately. Wheels permit quick set-off for train clearance.

SINCE 1917 RAILWAY MAINTENANCE EQUIPMENT

Woolery MACHINE COMPANY

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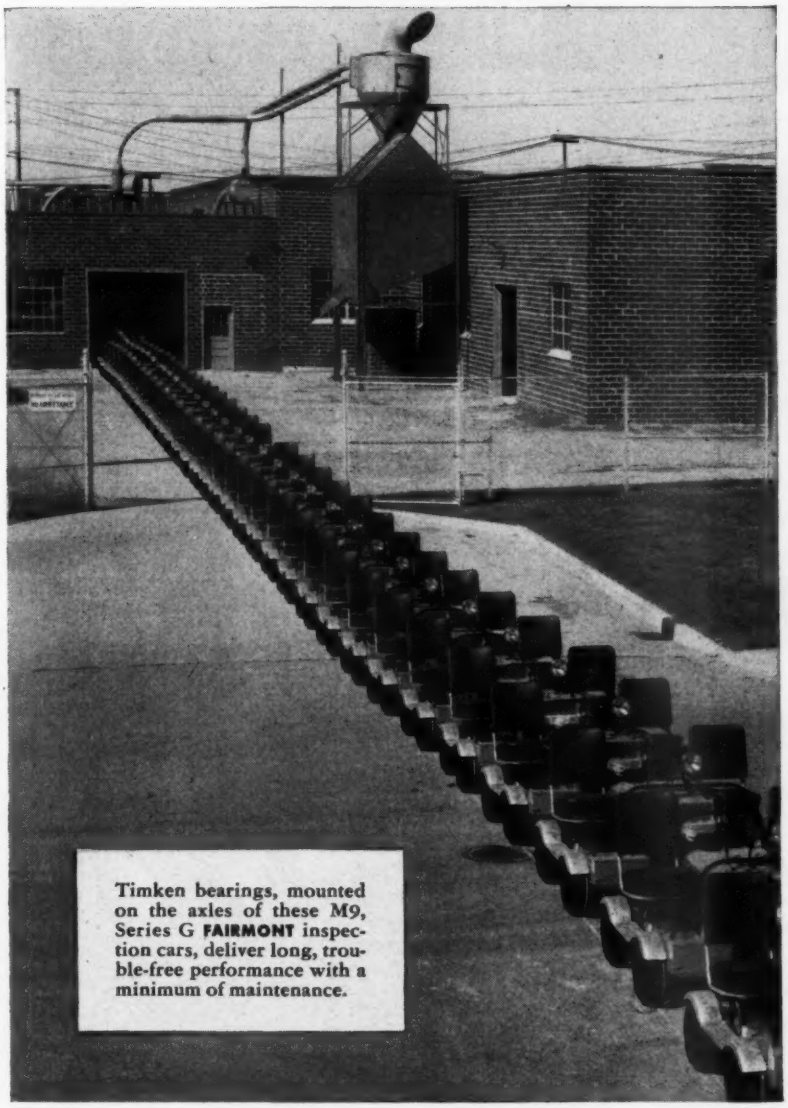
Exclusive Export Representatives

PRESSED STEEL CAR CO., NEW YORK, N. Y.

Increased efficiency . . . lower cost . . . for tightening or replacement . . . adjustable tension . . . *ample* power . . . *send for Bulletin* #192.

SINCE 1917 manufacturers of Tie Cutters, Tie End Removers, Tie End Trimmers, Power Bolt Tighteners, Spike Drivers, Motor Cars, Push Cars, Tool Transporters, Weed Burners, Extinguisher Cars, Chemical Sprayers, Tie Plate Spacers, Creosote Tie Sprayers, Rail Nippers, Flangeway Cleaners, Rail Joint Oilers, Power Joint Lubricators.

Turkish government railways choose TIMKEN® bearing equipped cars for trouble-free railway service



Timken bearings, mounted on the axles of these M9, Series G **FAIRMONT** inspection cars, deliver long, trouble-free performance with a minimum of maintenance.

RECENTLY shipped to Turkey, these M9, Series G Fairmont inspection cars help the alert Turkish railway officials prevent trouble on their roadbeds. And to keep the cars out of trouble, Fairmont mounts Timken® tapered roller bearings on the axles and the idler belt pulley.

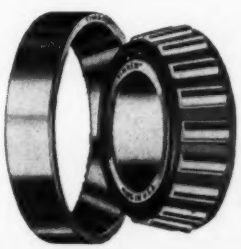
Timken bearings take any combination of radial and thrust loads because of their tapered construction. They can easily handle the radial weight-load of the car plus the sudden thrust loads imposed on the wheels at every curve.

Timken bearings even help these cars get more miles, less wear to the gallon. The true rolling motion and incredibly smooth surface finish of Timken bearings practically eliminate friction. Wheels turn easily and smoothly.

Lubrication intervals fall far apart. Timken bearings make closures more effective because they hold housings and shafts concentric. Grease can't get out. Dirt and moisture can't get in.

To get all these advantages in the equipment you build or buy, always specify Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

DESIGN LEADERSHIP

The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roller ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

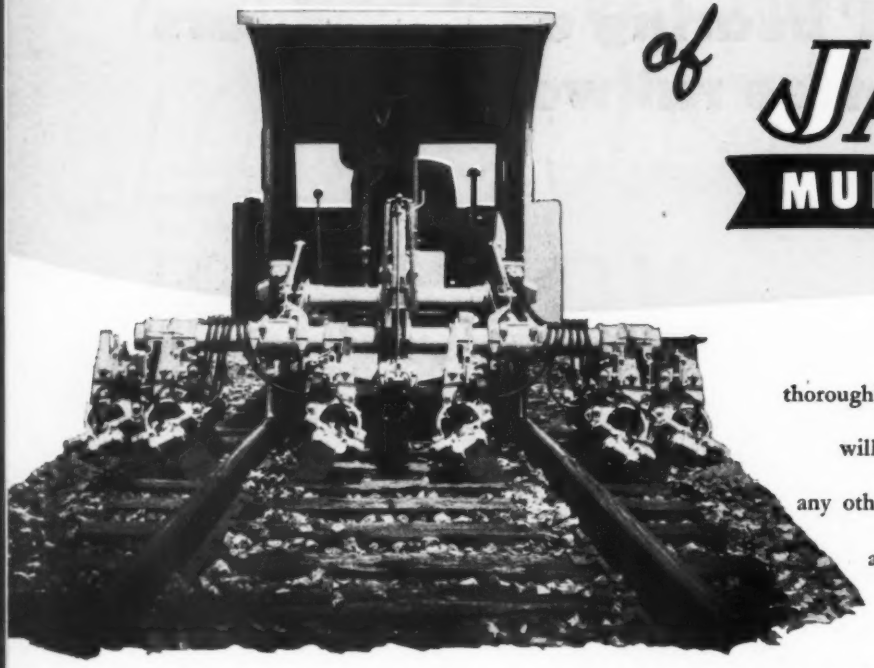
The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬮ AND THRUST →⬮← LOADS OR ANY COMBINATION →✳←

THE *FACTS* WILL SOUNDLY BAC

Your 1954 Budget Recommendati

of JACKSON MULTIPLE TAMPERS

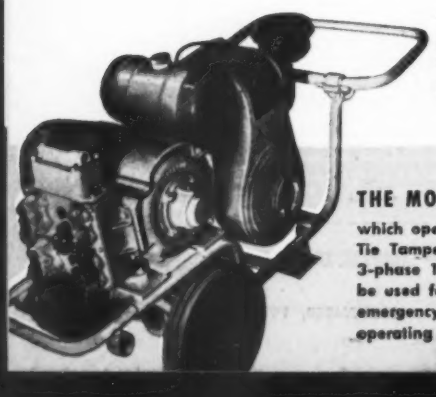


On leading railroads throughout America it has
thoroughly established that the JACKSON MULTIPLE TAM
will put up perfect track at less cost than can be achiev
any other means. Wide range usefulness is the secret of
annual production with real economy, in low to high
lift operations, in all ballasts. And, low-cost ma
maintenance merits consideratio
Write, wire or phone for any information de

JACKSON 2 to 4- TAMPER OUTFI

For many years the choice of the vast majority of the nation's railroads. Ideal for low-lift and smoothing work with small gangs using 2 to 4 tampers. Also excellent for major ballasting or out-of-face operations since several may be grouped for this purpose. For maximum maintenance economy and top quality track include both the MULTIPLE and JACKSON HANDTAMPERS in your 1954 budget recommendations.

Their unique, vibratory action and quickly interchangeable blades make them peak performers under all conditions.

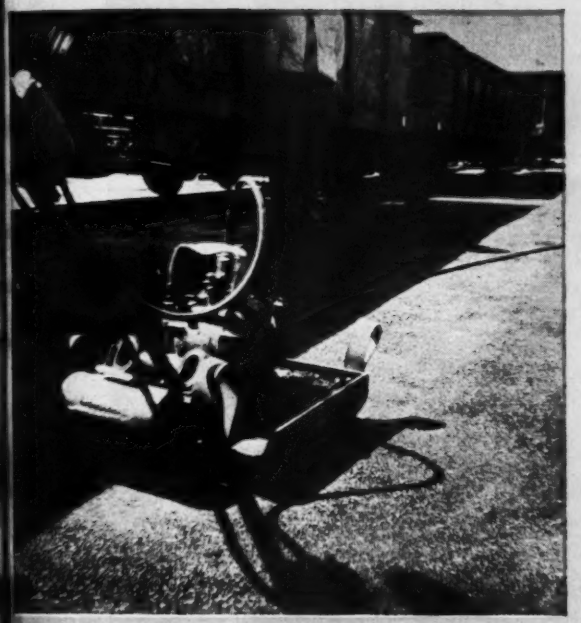


THE MODEL M-22 POWER PLANT which operates 2 to 4 Jackson Vibratory Tie Tampers supplies both single-phase and 3-phase 120 V. 60 Cy. AC, and may be used for emergency signaling, emergency CTC operations, lighting and operating various power tools.

ELECTRIC TAMP
& EQUIPMENT CO
LUDINGTON, MICHIGA
CANADIAN REPRESENTATIVES:

THE JACKSON VIBRATORY COMPACTOR

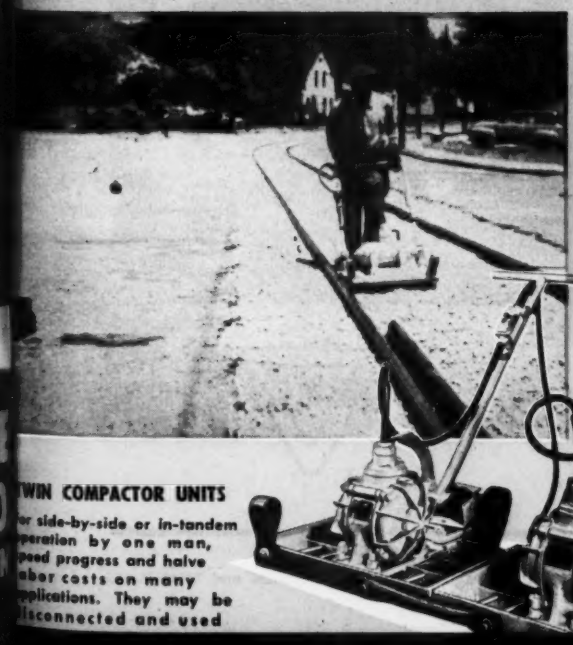
A VASTLY BETTER MEANS OF PAVING CROSSINGS and PLATFORMS!



It's faster, more mobile and more convenient than larger, more expensive equipment. It's self propelling, delivers up to 4500 1¾ ton blows per minute and will compact bituminous mixes at the rate of 1800 to 2100 sq. ft. per hour close to theoretical maximum density, and it is equally effective in compacting granular soils and rock sub-bases. It operates on 3-phase, 110 v. 60 Cy. AC from a Jackson Power Plant mounted on an auto trailer equipped for quickly picking up and lowering the compactor. (Skid mounting of Power Plant is optional). It does a job that is unexcelled by equipment at any price, and because of its quick and easy maneuverability it is a tremendous time-and-money-saver. Write for the complete facts, NOW!

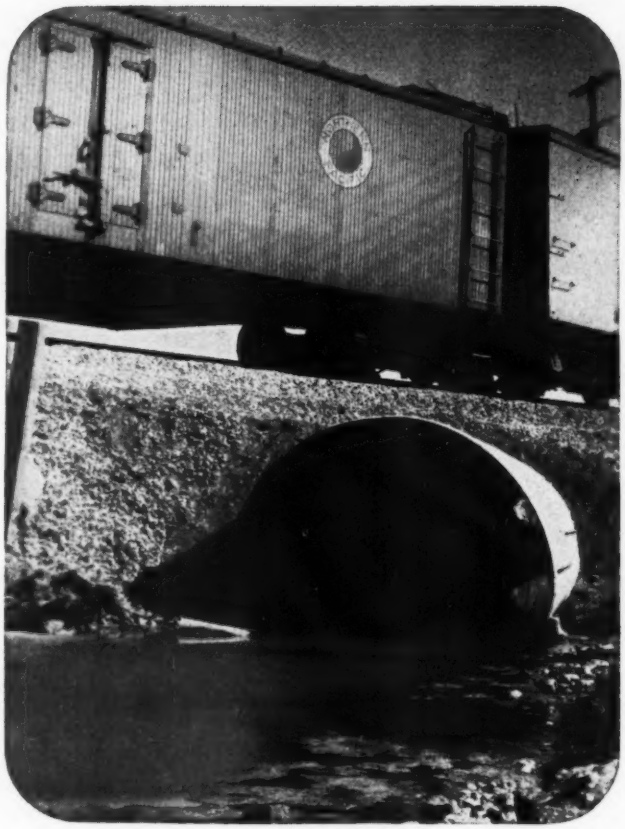
JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

THE JACKSON POWER PLANT
mounted on the trailer will also operate 4 Jackson Tie Tampers. Consequently, on those railroads having the track departments doing crossing work, the same crews can readily do the necessary raising work with 4 tampers carried on the truck that tows the trailer. Power Plant may also be used for light and operating power tools.



WIN COMPACTOR UNITS
or side-by-side or in-tandem operation by one man, speed progress and halve abor costs on many pplications. They may be isconnected and used

Bury your bridges to make them better



Here's the way to bury your bridge problems once and for all. Armco Drainage Structures will provide adequate waterway area and let you enjoy all the advantages of building your roadbeds on solid ground.

Armco Structures have the flexible strength of corrugated metal design. They will handle any load that travels your road. Equally important, they are fireproof and practically maintenance-free. Long, dependable service is assured. Today there are thousands of installations, and earth fills up to 100 feet or more are not uncommon.

There is a type of Armco Structure to meet every drainage problem. Standard, round corrugated metal pipe is ideal for smaller culverts; where headroom is limited Armco Pipe-Arch provides efficient drainage; and Armco MULTI-PLATE Pipe and Pipe-Arch extend the advantages of corrugated metal design into the larger sizes.

You also select the material durability best suited to service conditions. Plain galvanized is economical under normal conditions. Additional protection is obtained by adding a bituminous coating. Where severe corrosion is a problem there is Armco ASBESTOS-BONDED and for erosion Armco PAVED-INVERT offers utmost protection. A wide range of sizes helps meet your specific needs.

Use railroad-proved Armco Drainage Structures for dependability and economy. Write for complete information. Armco Drainage & Metal Products, Inc., 2053 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES

one rod for both

Airco Railroad Rod provides a single answer to these two common types of rail damage. You can use it to build up battered and chipped rail ends, or, by a simple adjustment of the welding torch's oxyacetylene flame, to fill in and smooth out rail burns. Hardness of the deposit is 251 to 350 Brinell — well within the required range for both applications. Airco Railroad Rod is standard on many major railroads, not only because it eases storage problems but also because of the high quality of its deposit.

Your Airco railroad representative will be glad to arrange an actual demonstration. Why not get in touch with him today?

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MOST PRINCIPAL CITIES

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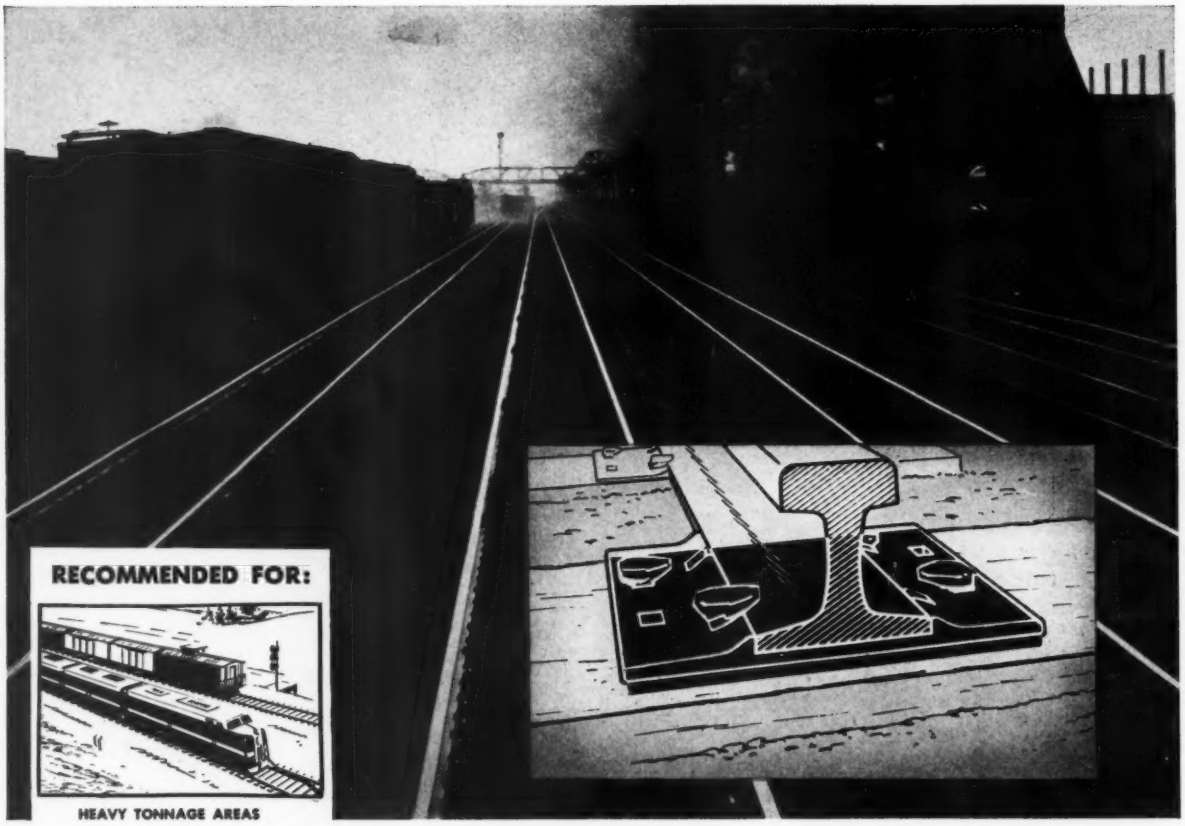
Air Reduction Sales Co. • Air Reduction Magnolia Co. • Air Reduction Pacific Co.

Represented Internationally by Airco Company International

Divisions of Air Reduction Company, Incorporated

at the frontiers of progress you'll find

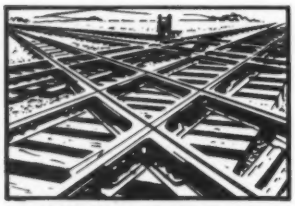
AN AIR REDUCTION PRODUCT



RECOMMENDED FOR:

HEAVY TONNAGE AREAS

CURVES, TRESTLES AND BRIDGES



CROSSINGS, INSULATED JOINTS

THROUGH STATION AREAS

Lengthen Tie service life

with Johns-Manville Tie Pads

. . . prevent tie cutting
. . . cushion track structure

BECAUSE they reduce cutting, abrasion and the action of moisture, Johns-Manville Tie Pads protect your tie investment . . . help cut maintenance costs. This is especially important in heavy service areas where tie replacement is a serious recurrent problem.

Designed to prolong tie service life, J-M Tie Pads reduce "pumping," track spikes stay tight longer, postponing maintenance expense for regauging and respiking. Resilient, they serve as durable protective cushions, seal out dirt and moisture, prevent abrasion and cutting. J-M Pads absorb impact shock, help isolate the transmission of noise and vibration.

J-M Tie Pads are formulated to offer low compressibility, high recovery, low plastic flow, good resiliency and flexibility over the widest temperature ranges encountered in service. These pads are resistant to creosote, diesel and lubricating oils, brine, water and freezing and thawing.

Available in all standard sizes, J-M Tie Pads are furnished uncoated or with a special asphalt adhesive coating on one side. For detailed information on Tie Pads or other Johns-Manville products get in touch with your J-M Representative, or write Johns-Manville, Box 60, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

95 YEARS OF SERVICE TO TRANSPORTATION

LOADING — High reverse speeds and power-boosted steering make these "PAYLOADERS" big producers on loading work . . . have dumping height to load big trucks.

DIGGING — Ditch-cleaning, bank-widening and other grading and excavating tasks are regular assignments for 4-wheel-drive "PAYLOADERS". They drive quickly to the job.

BACKFILLING — The regular bucket is widely used for fast backfilling work, but this blade attachment is also available.

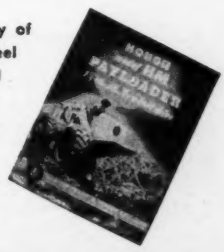
CARRYING — This Crane Hook is one of several attachments that greatly multiply "PAYLOADER" usefulness.

MASTER OF MANY JOBS

Big 4 wheel drive "PAYLOADERS" are proving their value and versatility to the railroads as they are to so many other industries. They are multi-purpose handymen for all sorts of maintenance-of-way work and in the yards and shops. They excavate, load trucks and backfill . . . load and plow snow . . . clean ditches, grade and spread . . . push, pull, lift and carry . . . walk readily over rails, on ties, up banks. These outstanding tractor-shovels have four speeds in reverse as well as forward, ranging from a powerful 2 M.P.H. crawl up to 27 M.P.H. transport speed.

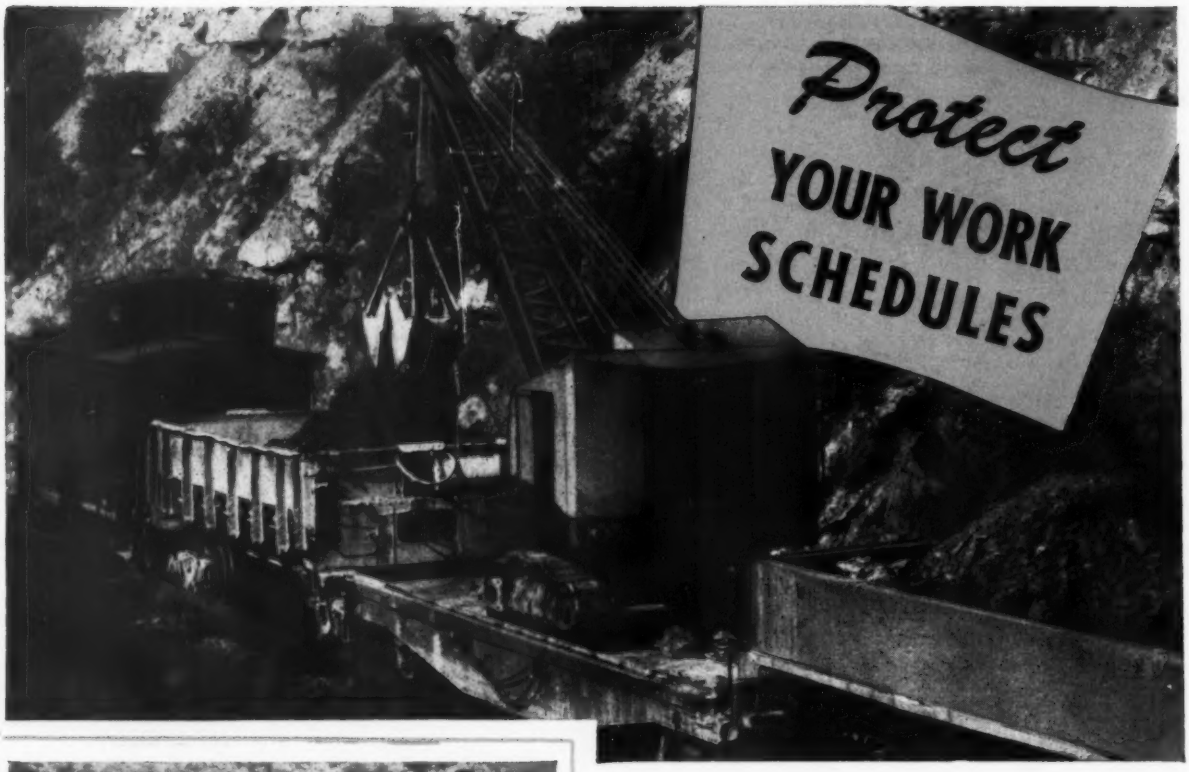
They've got power-boosted steering . . . full hydraulic fingertip bucket control . . . automatic tip-back bucket motion . . . unsurpassed operator visibility. And there's a choice of gasoline or diesel power up to 90 H.P. Once you've seen a "PAY-LOADER" in action, you'll realize what they can do on *your* jobs. See your "PAYLOADER" Distributor today or write The Frank G. Hough Co., 751 Sunnyside Ave., Libertyville, Illinois.

WRITE for full information on any of the "PAYLOADER" models: FourWheel Drive HM — 1½ yd. and HR — 1 yd.; Rear Wheel Drive Models HY — 1¼ yd., HF — ¾ yd., HE — ½ yd.; Front wheel drive Models HAH — 15 cu. ft., HA — 12 cu. ft.



PAYLOADER®

THE FRANK G. HOUGH CO. SINCE 1920



SELF-PROPELLED RAILAID works both on and off-track, travels at 4 rail speeds up to 24.3 m.p.h. Crane loads and unloads itself on ramp-equipped propulsion car in less than 10 minutes. It lifts 6.9 tons from car, 8.9 tons from ground . . . readily converts to clamshell, dragline, pile driver, ½-yard shovel or hoe. For more information, send for bulletin.

RAILROAD MUD-JACK® stabilizes track beds without interrupting rail traffic. Injection points are driven below ballast . . . hydraulic pump forces soil-cement slurry into weakened area . . . stabilizes existing material, leaves firm lasting sub-grade. You save on labor, cut maintenance costs, reduce "slow orders." Write for 8-page engineering booklet.

with KOEHRING *heavy duty* 304

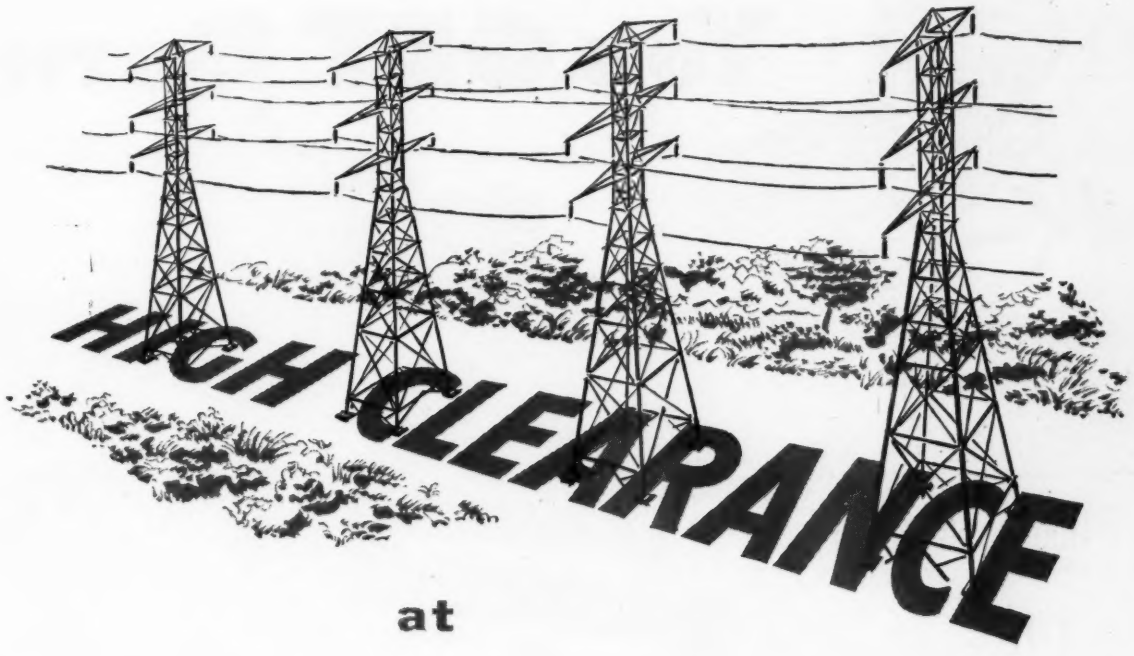
Operating from work train, or on independent off-track operation, the *reserve* strength and weight-stability of Koehring heavy-duty 304 protects work schedules against costly down time . . . and gives you a definite advantage in extra work capacity. With 13.9-ton lift on crawlers (25-tons on rubber) there's plenty of lift capacity for loading and unloading cars, scrap-handling and salvage around yards . . . placing girders, timbers and other materials on bridge construction and repairs. Heavy-duty 304 handles magnet crane, pile driver, clamshell and dragline buckets on a wide work range . . . readily converts to ¾-yard shovel or hoe for cutting down embankments, ditching, slide removal and other heavy digging.

With every 304 attachment, big Koehring booster clutch cuts normal lever pull 50% . . . reduces operator fatigue, yet retains "feel" of load. Heat-compensator spring makes clutch tension changes automatically, maintains top operating efficiency at all times. Check 304 work capacity and all heavy-duty mechanical features in new 36-page catalog . . . write for your copy. Other Koehring sizes: 7¾ to 79½-ton lift capacities . . . ½ to 2½-yard dipper capacities. K272REV.

KOEHRING HEAVY DUTY

KOEHRING
COMPANY, Milwaukee 16, Wis.
Subsidiaries: KWIK-MIX • PARSONS • JOHNSON

2,4,5-T
ACID and ESTERS



at

LOW COST

For cleaner, more effective clearance of your right of way, spray with formulations of 2,4,5-T.

Utilities and railways report savings of from one-half to two-thirds over the cost of mechanical or manual methods! This potent herbicide kills brambles, barberry, poison oak, mesquite and other woody plants right down to the roots. What's more, you need only ½ to 4 lbs. to the acre, depending upon the density and type of brush.

Why waste time, money, when 2,4,5-T can do the job for you chemically so much faster and better? Your dealer can supply you.

ETHYL CORPORATION
Chemicals for industry & agriculture

100 PARK AVENUE, NEW YORK 17, N.Y.

ATLANTA, BATON ROUGE, CHICAGO, DALLAS, DAYTON, DENVER, DETROIT, HOUSTON, KANSAS CITY, LOS ANGELES, NEW ORLEANS, PHILADELPHIA, PITTSBURGH, SALT LAKE CITY, SAN FRANCISCO, SEATTLE, TULSA, MEXICO CITY AND (ETHYL ANTIKNOCK, LTD.) TORONTO.

You NEED Both
You GET Both

Standard Power

High Cycle Power

Use HOMELITE Dual-Purpose GENERATORS

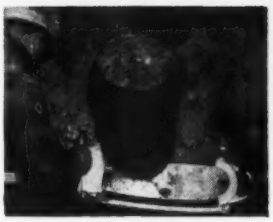
FOR MONEY SAVING MAINTENANCE

With a Homelite Dual Purpose Generator you can have plenty of power . . . any spot on your line . . . to operate electric tools. And when we say electric tools, we mean *all* electric hand tools . . . high cycle tools as well as standard universal tools.

This is a real advantage to railroad maintenance men. Even though the trend is to lighter weight, more efficient high cycle tools, you still have a lot of good standard universal tools in your equipment. To keep them going . . . to get the most out of your investment . . . and to take advantage of all new money saving tools, you need both standard and high cycle power.

You get both from the one Homelite Dual Purpose Generator . . . a light weight gasoline engine driven unit that can be put into operation any place you need it . . . fast.

Write for demonstration.



Manufacturers of Homelite Carryable Pumps • Generators Blowers • Chain Saws

Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Quebec

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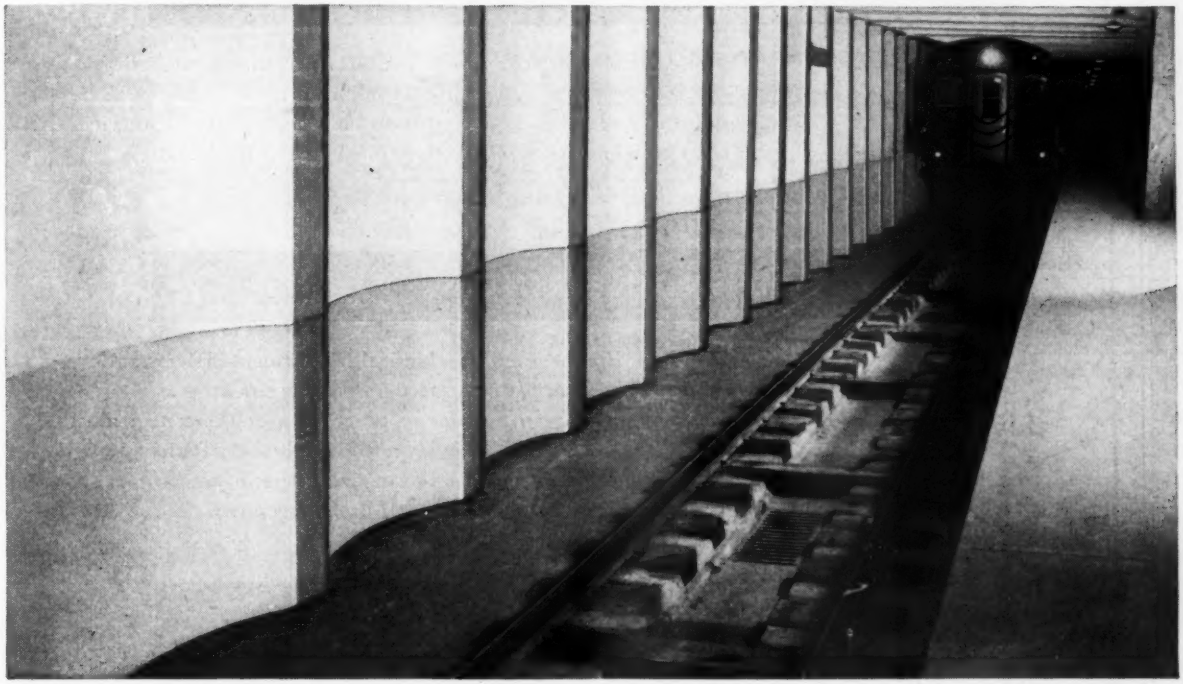
DOW

WOOD TIES IN NEW SUBWAY ARE PENTA TREATED FOR LONG LIFE

Railway lumber gives long trouble-free service when treated with PENTA, the clean, modern wood preservative



The Dow Chemical Company
Dept. PE 3-3B6, Midland, Michigan

Please send me:

- ☐ Wood treating specifications.
- ☐ Valuable booklet "Pointers on Penta."
- ☐ Sources for treated wood.

Name_____

Title_____

Company_____

Address_____

City_____ State_____

Wood ties in Philadelphia's new Locust Street Subway are pressure treated with clean PENTA*. The specifying engineers on this big subway project selected PENTA because experience and records prove that it gives top results under tough conditions.

PENTA will keep these subway ties strong and serviceable year after year by positively controlling decay-causing bacteria and fungi.

You can also rely on PENTA to prevent damage caused by termites. Besides controlling decay and termites, PENTA builds good customer relations because it is *clean*. Platforms and loading docks built with PENTA-treated lumber are pleasing to the eye and easy to walk on. Workmen like PENTA-treated wood, too, because it is easy to handle.

Over 60 suppliers can furnish you with PENTA-treated lumber. Ask your supplier about *clean* *PENTAchlorophenol or write THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on DOW CHEMICALS

DOW

What are the Ingredients of Good Railroad Service?

RAILROAD MANAGEMENT

These are the men who must maintain an intelligent policy control; they must have a constant awareness of the nation's pulse and of all facts available to help them *improve* service, *cut* costs and increase profits; these men must *discriminate*, *decide*, then *act*.

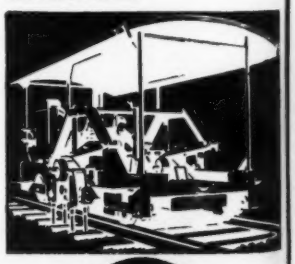
RAILROAD ENGINEERING

The Chief Engineer and Mechanical Department officers and employes must *supply information* to management — as well as *apply* new principles to practical use; these men must have *vision* as well as knowledge to see through faulty engineering design — and to recognize value in new principles in order to *recommend to management*.

RAILROAD SUPPLIERS

This is a group of industries *within an industry*; firms who exist to serve the railroads. They are constantly improving products and seeking ways to cut costs.
Matisa is a railroad supplier with capital invested in the future of the railroads — continually investing more on research. *Matisa* track equipment makes roadbeds smoother, speeds maintenance, cuts costs . . . *Matisa* is known as the firm which has set up a "new standard of track maintenance."

Matisa's Sales Progress Report *proves that more and more railroad presidents are looking to their chief engineers for track maintenance equipment to ensure operating economy as well as quality. If you would like a copy of this report, write us.*



Matisa

EQUIPMENT CORPORATION

224 SOUTH MICHIGAN BLVD. • CHICAGO 4, ILLINOIS

TRACKWORK SPECIALISTS ALL OVER THE WORLD

This message appeared in the Wall Street Journal

NEWS NOTES...

NOVEMBER, 1953

...a resumé of current events throughout the railroad world

The Eastern Railroad Presidents Conference has announced that the cost-of-living wage increase for railroad employees which went into effect October 1 will cost eastern railroads approximately $9,600,000 for the remainder of 1953.

•

Class I railroads installed 1,565 new locomotive units in the first eight months of 1953, compared with 2,188 new units in the comparable 1952 period, the Association of American Railroads has announced. Installations in the first eight months this year included 1,550 diesel units and 11 steam and gas turbine-electric locomotives.

•

A new kind of railroad ticket went on sale October 1 at all ticket offices of the Southern. Said to be the first punched-card railroad ticket ever used in this country, the new card ticket, slightly larger than a dollar bill, folds along pre-scored lines to a size easily carried in wallet or pocketbook.

•

The Commercial Barge Lines' proposal for entering "piggy-back" operations over most navigable streams in the midwest has been rejected by the Interstate Commerce Commission on the grounds that public convenience and necessity do not require such service.

•

Two awards have been presented to Southern Pacific President D. J. Russell by the National Defense Transport Association for his leadership in rapidly reopening the SP's San Joaquin route following the disastrous Tehachapi earthquake in 1952.

•

Examiner C. W. Griffin has recommended that the Interstate Commerce Commission halt a threatened rate war with a finding that railroad rates on iron ore imported through the ports of Philadelphia, New York and Boston should be on the same basis as the rates out of Baltimore.

•

"Passenger preference" has dictated a change in the color scheme of Erie passenger trains. New design incorporates green as the basic color with a wide light gray panel outlined in yellow running the length of each car at window level.

•

It has been estimated that the Post Office Department is paying 18.6 cents and 20.04 cents per ton-mile for transporting first class mail between New York and Chicago and Washington and Chicago via the air lines, whereas the same service costs an estimated five cents per ton-mile by rail. It has also been pointed out that the speed of air transport might not be so swift if the air carriers were forced to take on the whole job of working the New York-Chicago and Washington-Chicago routes by dropping off and picking up mail at intermediate points.

NEWS NOTES (continued)

The Santa Fe has been restrained from entering into a union shop agreement by a temporary injunction issued recently in State District Court at Amarillo, Tex. The case has become a test of whether the State of Texas' "right to work" statute and similar state statutes of this nature take precedent over Federal legislation—including the 1951 amendment to the Railway Labor Act, and the Taft-Hartley Act, both of which permit union shop agreements—and whether or not such Federal legislation is constitutional.

•

According to industry spokesmen, air freight shipments will reach an all-time high in 1953—reaching an estimated 275 to 300 million ton-miles by the end of the year. For the first half of this year, air freight tonnage was up 18 per cent over last year.

•

A $75-million air rights project has been announced by the Chicago Union Station Company involving the leasing of three block-sized parcels of land for the construction of large, modern buildings over present train sheds.

•

At the annual meeting on October 8 of the National Association of Shippers Advisory Boards, James K. Knudson, administrator of the Defense Transportation Administration and member of the Interstate Commerce Commission, warned U. S. railroads to take steps "immediately" to reach the goal of 1,800,000 freight cars in service, lest they be faced with punitive action by government agencies.

•

The Bangor & Aroostook is issuing credit cards permitting passengers to charge railroad and Pullman tickets at all B&A stations. The cards are also accepted on B&A dining cars for meals and incidental services. Although the cards can be honored only at B&A stations, patrons may charge through one-way or round trip fares from those stations to any point in the United States or Canada.

•

Class I railroads in the first eight months of this year had an estimated net income, after interest and rentals, of $572,000,000, according to the Bureau of Railway Economics of the Association of American Railroads. This compares with a net income of $435,000,000 in the first eight months of 1952. Net railway operating income, before interest and rentals, was $744,916,284, compared to $613,069,838 for the same period of 1952.

•

ALSO WORTH NOTING—Patrick Edward Crowley, 89, who was president of the New York Central from 1924 to 1931, died October 1 at his home in Mt. Vernon, N. Y. . . . Railroad passenger revenue was down 5.8 per cent in the first half of 1953 and parlor and sleeping car revenue was down 15.6 per cent, as compared with 1952 . . . More than half of all Central of Georgia employees now own stock in the company, as a result of a stock purchase plan announced in July and concluded at the end of August.

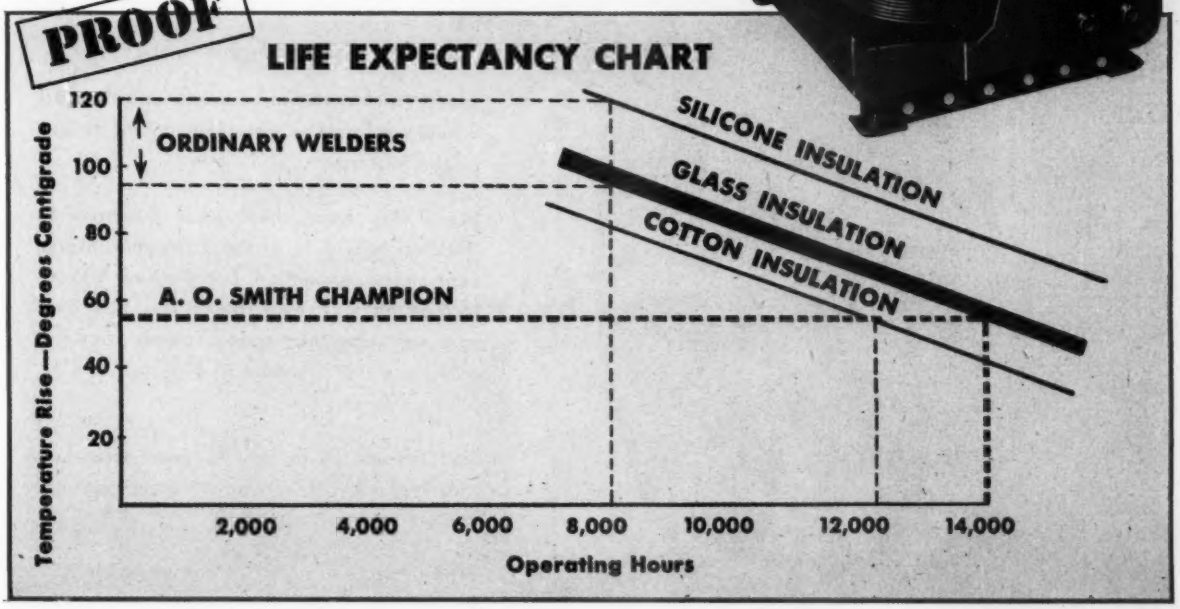
The A. O. Smith *Champion* Heavy-Duty A. C. Welder

6000 hours longer life

than any other A. C. welder

Available in 300-, 400-, and 500-Amp. models.

PROOF



Temperature Rise Determines Machine Life

According to the Insulation and Aging versus Temperature Curves, as published by the A.I.E.E. . . . *the cooler a welding machine operates, the longer its production life.*

The A. O. Smith Champion is the *only* A. C. welder on the market with enough copper and cooling capacity to operate without exceeding a 55° C. temperature rise—as compared to the 90° C. rise allowed by N.E.M.A. for glass-insulated welders.

This means: The Champion will give you top production efficiency almost twice as long as any other A. C. welder on the market today.

Built for those who want the best in welding, the Champion has a full 75 open circuit volts, high-velocity down-draft ventilation, all-weather case, 12½ KVA power factor correction and stepless current control.

For additional information on welding machines, electrodes and accessories, see your local A. O. Smith distributor or write to A. O. Smith Corporation, Welding Products Division, Milwaukee 1, Wisconsin.

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WELDING PRODUCTS DIVISION
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One Standard of Quality

DEMOUNTABLE STEEL WHEELS FOR EVERY TRACK CAR

Every Fairbanks-Morse demountable steel wheel conforms to one standard of quality — the highest!

Every step from sheet steel purchase to finished wheel is under Fairbanks-Morse control and inspection. Every wheel is cold-formed in our own plant, on our own presses using our own modern dies . . . machined and finished to a design of simplicity and strength.

This control of quality is your assurance that F-M wheels are the sturdiest track car wheels on the rails today!

When you need replacement wheels in 20", 16" or 14" sizes, standardize on quality . . . standardize on Fairbanks-Morse steel wheels for longer life. Fairbanks, Morse & Co., Chicago 5, Ill.

Conform strictly to A.R.E.A. standards

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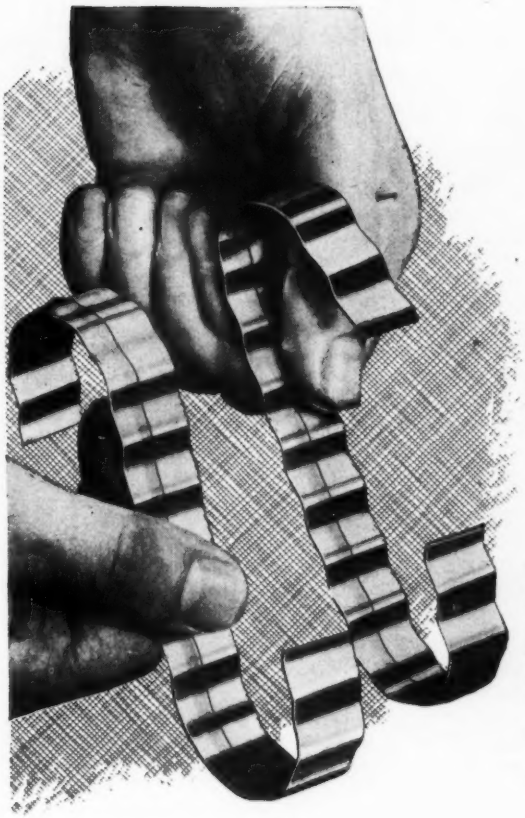
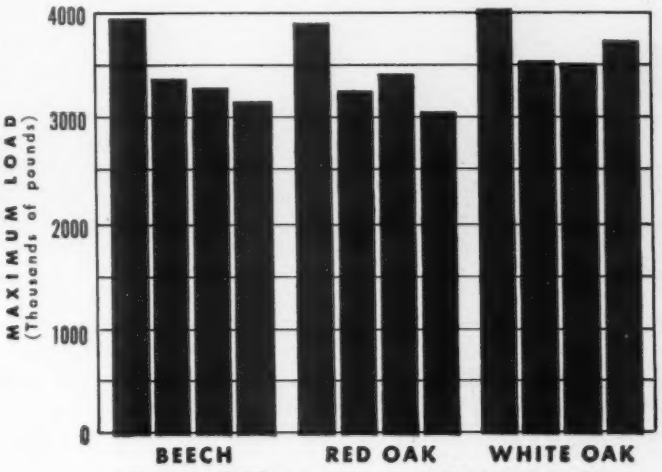
RAIL CARS AND RAILROAD EQUIPMENT • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAMMER MILLS • MAGNETOS



New tests prove SUPERIOR HOLDING POWER of SHARON IRONS

Test data approved for release by PITTSBURGH TESTING LABORATORY



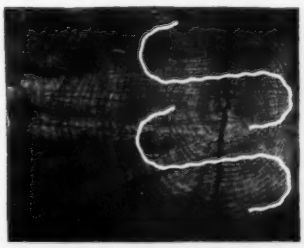
Tests of Sharon Irons 3¼" in wood

Why you can depend on full holding power of Sharon irons

Here is a typical checked tie. Note off-center position of the split. If an alternate holding device were *centered* in this timber, it would have an effective depth from the split of only 1½ inches; and effective holding power would be only 1800 pounds*.

*Holding power of alternate device at various depths:

½"	390 pounds
1"	1030 pounds
1½"	1800 pounds
2"	2550 pounds
2½"	2920 pounds
3"	3090 pounds
3½"	3575 pounds



If Sharon irons had been installed in this tie, they would have been driven at the heart of the timber, thus would have exerted maximum holding power to prevent splitting. (Based on test data, holding power approximately 3541 pounds.)

TESTS, proving the high holding power of Sharon anti-checking irons, were made by driving various types of 5" Sharon irons into test timbers, approximately 3-¼" deep. The exposed end of each iron was then gripped by a testing machine and pulled until the wood began to plug and finally until maximum loading was reached. The average maximum load carried by Sharon irons, of C and S types, crinkled and plain, in different types of wood, was 3541 pounds.

You can obtain this superior holding power of Sharon irons and provide insurance against splitting of ties at surprisingly low cost. Railroad figures show installed cost of Sharon irons is about seven cents per main line tie . . . approximately ¼ *the cost of alternate methods.*

Call Brainard now for complete information

Brainard

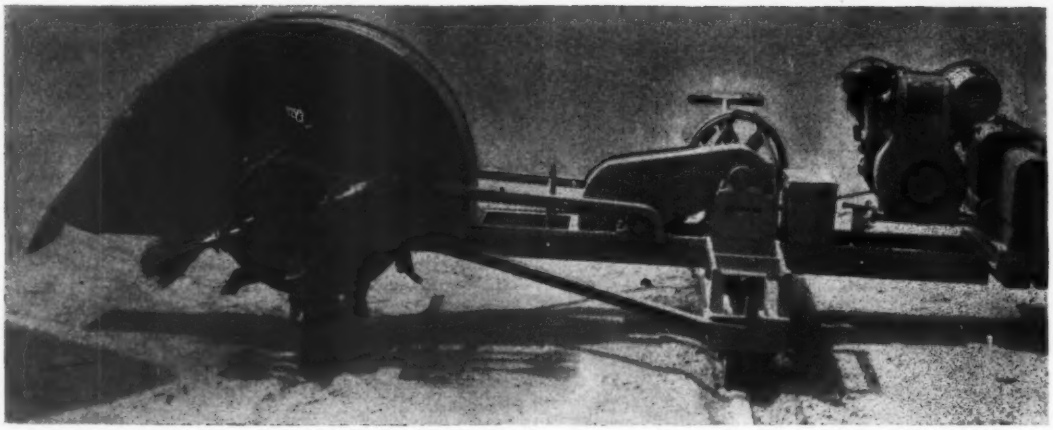
SHARONSTEEL

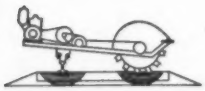
STEEL DIVISION
SHARON STEEL CORPORATION

For booklet and/or samples, write Brainard Steel Division, Dept. S-11, Griswold Street, Warren, Ohio.

WARREN, OHIO

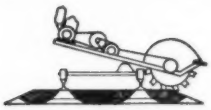
HE KERSHAW KRIBBER
STILL THE CHAMP!



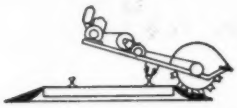


1. RELAYING — Kershaw Kribbers remove ballast to a depth of 4 inches below top of ties—sweep tie clean for adzer in same operation.

2. STRIPPING — while Relaying — Kershaw Kribbers can be used to completely remove ballast between ties and under removed rail . . . fast and thoroughly.



3. STRIPPING with rails in place—or cleaning out between tie ends ahead of ballast cleaners or retimbering side.



4. CLEANING OUT TIE ENDS ahead of ballast cleaners—Kershaw Kribbers make sure of a clean, efficient job.

4 IMPORTANT TRACKWORK JOBS DONE *ONLY* BY THE KERSHAW KRIBBER

When it comes to complete, economical, all-around operation, you just can't beat the Kershaw Kribber! It's still the champion in its field!

Whether it's relaying, stripping while relaying, stripping with rails in place or cleaning out tie ends, the Kershaw Kribber can do the job for you—quickly, thoroughly, efficiently and economically.

Tried and proven on many of the nation's leading railroads during the six years it has been in service, the Kershaw Kribber is self-propelled and requires only TWO MEN to operate it.

And the Kershaw Kribber also may be used to skeletonize track while the rails are being relaid, or to partially skeletonize track in retimbering operations.

The Kershaw Kribber thoroughly cribs the track and brushes the tie! It will break up and remove cemented ballast and will remove ballast at road crossings!

THE KERSHAW KRIBBER IS THE ONLY MACHINE TO DO THE COMPLETE JOB! It's been proven on the job for the past six years. The Kershaw Kribber is still the champ!

In addition to the Kershaw Kribber, Kershaw Manufacturing Co. also constructs such top-flight equipment as its Ballast Regulator and Plow, Utility Derrick, Mocar Crane, Hydraulic Jack, Jackall, Tie Replacer, Track Broom and others.

CK-TALK—Published every month by Kershaw Manufacturing Co. Write for your free today.

KERSHAW

KERSHAW MANUFACTURING CO., INC., P. O. BOX 510, MONTGOMERY, ALA.

TRACKWORK EQUIPMENT DESIGNED, DEVELOPED AND PROVEN ON THE JOB

HOW ADVANCED DESIGN

Makes Allis-Chalmers Tractors more dependable for off-track work

These heavy-duty tractors have toughness and ease of servicing to match their outstanding performance ability. Here are some of the advanced design features that provide extra strength and protection — keep Allis-Chalmers tractors on the job more hours:

1. One-Piece, All-Welded Structural Main Frame . . . strong and firm without a single ounce of excess weight — absorbs all vertical and horizontal stresses.

2. Extra Large Idler and Sprocket eliminates rocking action, puts more track on the ground for greater stability and better traction.

3. Spring-Loaded, Positive Seal keeps dirt, moisture and grime from damaging truck wheels, idlers and support rollers . . . you lubricate them only once every 1,000 hours.

4. All-Steel, Welded A-Frame Track Stabilizer permits free track oscillation, yet keeps tracks rigidly in line and absorbs thrusts and twists from shock loads and working on uneven terrain.

5. Oil Enclosed Track Release Mechanism reduces track maintenance and breakage. An adjustable screw lock provides positive holding action that maintains adjustment at required setting.

6. Engine Not Used as Structural Member — no strain is transmitted to it. Engine weighs less per horsepower developed, because of 2-cycle design — has modern unit injection.

UNIT CONSTRUCTION SAVES SERVICE TIME

With Allis-Chalmers *unit construction*, major assemblies are easily removed without disturbing related assemblies. This brings real savings in time and money, puts tractors back to work faster. It assures better inspection and maintenance, too. Servicemen find it easy to remove major parts to correct trouble before damage develops.

Let your dealer tell you more about the toughness of Allis-Chalmers tractors, their time-saving unit construction — and their unequalled lugability and work power.

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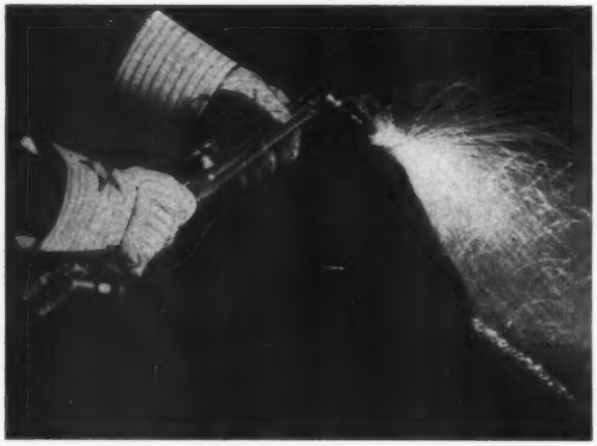
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Make your OXWELD W-24-R

Trade-Mark

Blowpipe do more jobs...with this new

CUTTING ATTACHMENT



SPECIFICATIONS

OXWELD CW-24-R Cutting Attachment

HEAD AND BODY

Rugged forged steel—with 4-tube structure.

EQUIPPED WITH SPECIAL OXWELD INJECTOR

Permits use with either low- or medium-pressure acetylene.

NOZZLES

Chromium-plated—sizes to handle steel up to 5 in. thick.

In shops and out on the right-of-way there are thousands of OXWELD W-24-R blowpipes giving top-notch service in welding and heating applications. But that's only part of the job these blowpipes can do . . .

With a CW-24-R Cutting Attachment your operators can do many routine cutting jobs in steel. They can cut steel up to 5 in. in thickness, gouge out defective or temporary welds, and cut away rivets.

To get more information on the CW-24-R Cutting Attachment, write to OXWELD or ask a representative for details.

"Oxweld" is a registered trade-mark of Union Carbide and Carbon Corporation.

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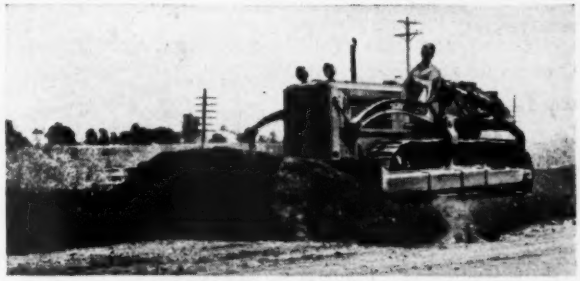
Modernizin' the Milwaukee

NEW 70-TRACK YARD. Milwaukee railroad officials call this freight classification yard at Bensenville, Illinois, the world's largest using both route switching and retarder speed control. The 70 tracks have a 5,311 car capacity.

CLEANUP CREW. Before the first 37 tracks were placed in service in mid-summer, this International TD-9 diesel crawler and front-end shovel did a fast cleanup job, removing dirt from excavations for light towers and from track relocations.



HEADIN' FOR THE HUMP. This roadbed, being roughed out by an International TD-14 crawler and dozer, will provide a second main lead from the roundhouse to the hump in the intricate maze of tracks at the Bensenville yard.

International Power speeds completion of new 5½ million dollar freight car classification yard

The $5,500,000 outlay by the Milwaukee railroad for a new freight car classification yard at Bensenville, Illinois, marks a giant stride forward in the line's modernization program to provide improved customer service.

Much of the dirt moving—from building new track beds and raising old tracks right down to the final cleanup jobs—was handled with dispatch by two International crawlers —a TD-14 with bulldozer and a TD-9 with front-end shovel.

For power proof of what Internationals can do in your yards or along your right of ways, call your International Industrial Distributor today. He'll arrange a demonstration with the equipment you are interested in whenever and wherever you say.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL POWER THAT PAYS

Clear the Track

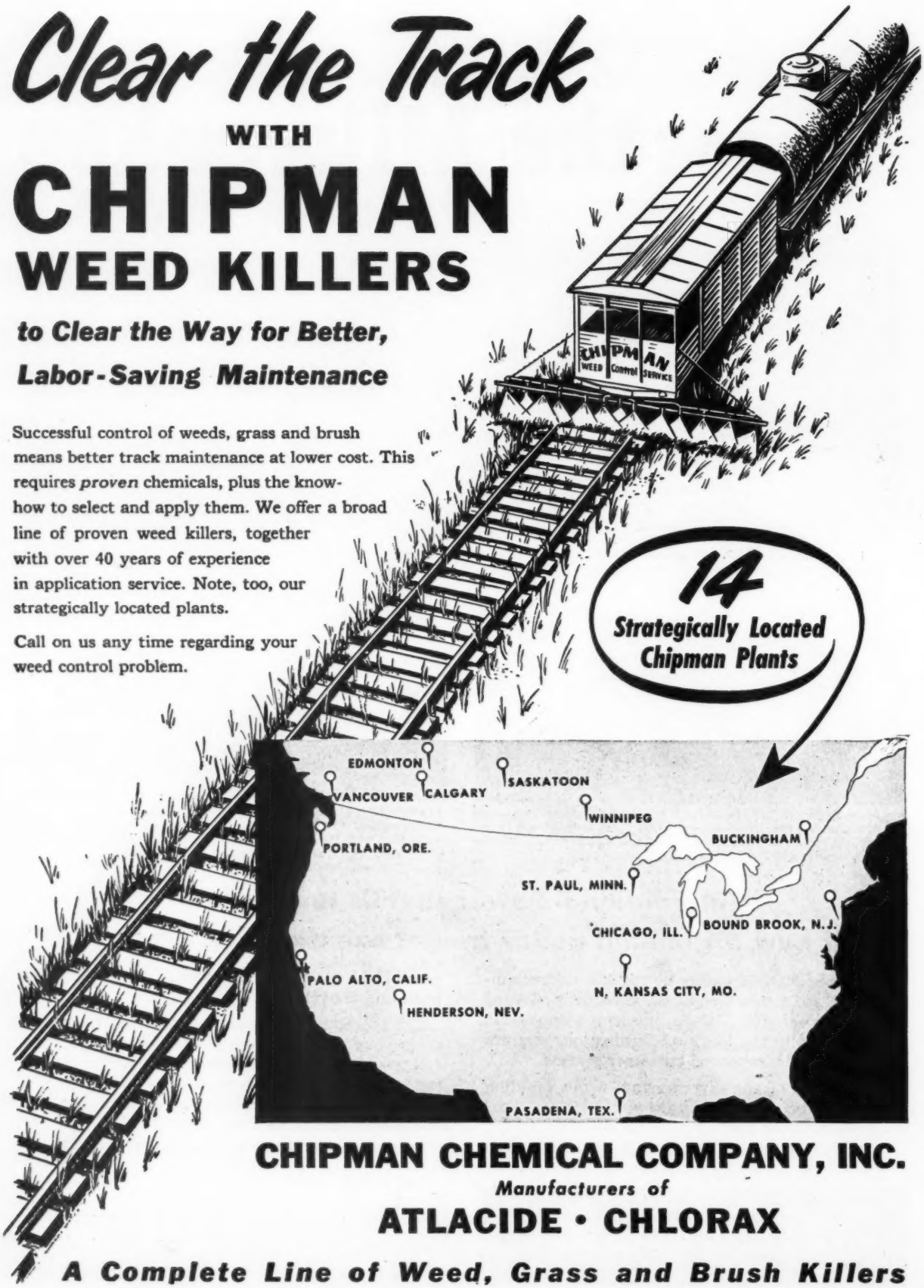
WITH

CHIPMAN
WEED KILLERS

to Clear the Way for Better, Labor-Saving Maintenance

Successful control of weeds, grass and brush means better track maintenance at lower cost. This requires *proven* chemicals, plus the know-how to select and apply them. We offer a broad line of proven weed killers, together with over 40 years of experience in application service. Note, too, our strategically located plants.

Call on us any time regarding your weed control problem.



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Manufacturers of

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A Complete Line of Weed, Grass and Brush Killers

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"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

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"R. B. C. C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.

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Of Railway Track and Structures published monthly at Chicago, Illinois for November, 1953

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4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which the stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

MERWIN H. DICK, Editor

Sworn to and subscribed before me this 29th day of September, 1953.

(Seal) RALPH E. WESTERMAN, Notary Public
(My commission expires February 3, 1957.)

For Wagon, Truck or Locomotive Crane work, you can't go wrong when your

BROWNING'S ON THE JOB!

WAGON CRANES
2 Models
17½ to 25 Tons
25 to 100 Ft. Booms

TRUCK CRANES
5 Models
8 to 30 Tons
25 to 120 Ft. Booms

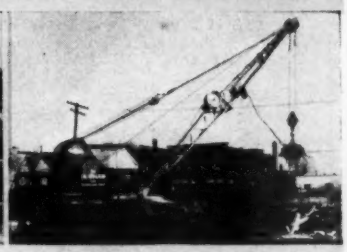
LOCOMOTIVE CRANES
3 Models
25 to 50 Tons
50 to 135 Ft. Booms

You can't beat BROWNINGS *on these jobs*

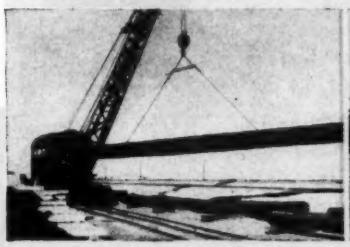
HEAVY MATERIALS HANDLING

CAR LOADING AND SWITCHING

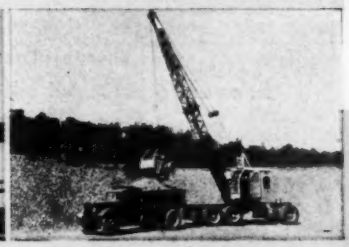
STEEL ERECTING



SCRAP YARD PICK-UP



RAILROAD MAINTENANCE



SAND AND GRAVEL LOADING

Browning builds the only complete line of cranes for all heavy-materials handling

TRUCK CRANES with independent control of each function *separately* or *simultaneously* on all models. High-speed maneuverability in worst conditions. Short wheelbase for operation in close quarters.

SELF-PROPELLED WAGON CRANES, originated by Browning. Rubber-mounted, one man operation, with the power, smoothness and versatility to operate efficiently and economically on a wide variety of crane work.

DIESEL AND TORQFLO LOCOMOTIVE CRANES with unequaled power for switching. Fast, easy controls for maximum productive operation. Rugged design and construction for year-in, year-out dependability.

BROWNING can recommend, and deliver the *right* crane model for your job. Our fifty-four years' experience as crane specialists is yours for the asking. Write us for complete information.

THE BROWNING CRANE & SHOVEL CO.
Dept. G, 16226 Waterloo Road, Cleveland 10, Ohio

BROWNING
LOCOMOTIVE, WAGON TRUCK AND CRAWLER *Cranes*

Atlantic Coast Line uses 14 Gradalls

FOR ALL THESE JOBS

- Cleaning tracks and roadbeds
- Maintaining drainage ditches
- Laying rail
- Restoring embankments
- Widening cuts and fills
- Trenching and backfilling
- Excavating
- Grading and sloping
- Ripping and loading old pavement

Gradall finishes top half of slope to exact desired angle after trimming lower portion. It's "hand-finish" work without any hand labor!

Gradall operates from flat car as part of work train. Boom reaches as far as 24 feet to quickly clean and restore ditches and load spoil in gondola car.

ATLANTIC COAST LINE RAILROAD now owns and operates 14 Gradalls on its 5,000 mile system, handling all these regular jobs and many others, too.

Supervisors report that Gradalls now do many jobs formerly considered impractical for machines and always reserved for hand labor.

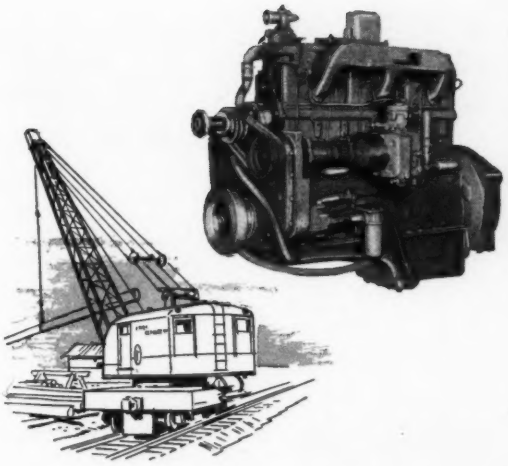
The multi-purpose Gradall has *proved* itself a cost-cutter for Coast Line. You, too, will find Gradall's powerful hydraulic *arm-action* pays off in lower costs, less hand clean up, and more jobs handled in more places. And the Gradall is so simple to operate, a new man can master it in a couple of hours.

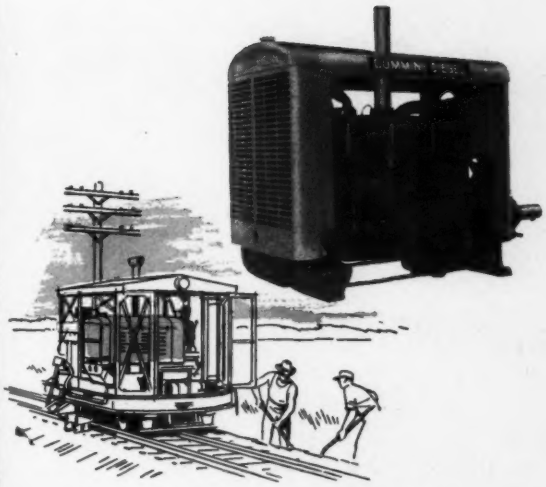
But find out for yourself. Contact your nearest Gradall Distributor for a field demonstration. He'll show you how the Gradall can cut costs on your own maintenance and construction work.

Gradall
DIVISION OF WARNER & SWASEY Cleveland
PRECISION MACHINERY SINCE 1881

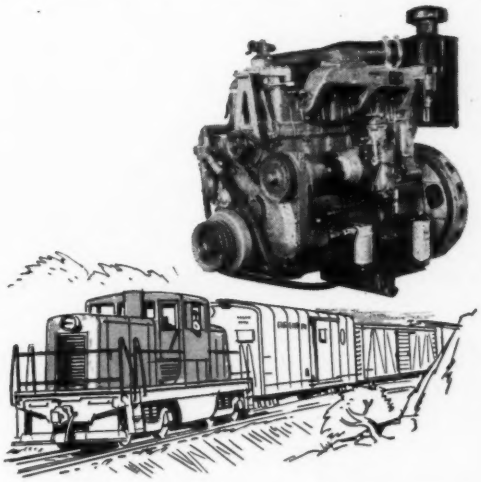
Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY





In Railroad Power Applications (60 to 600 h.p.)



We manufacture a complete line of models, 60 to 600 h.p. for:

- Switching
- Maintenance of Way
- Crane work
- Auxiliary power application
- The nation-wide dealer organization assures comprehensive service facilities in all principal cities . . . complete shop equipment, expert mechanics and Genuine Cummins Parts.

CUMMINS® DIESELS

Make light work of tough jobs

When you select a Cummins Diesel for any railroad application—from Maintenance of Way equipment to switch engines—you're selecting the engine that gives you most in dependability and economy.

You'll get more work done per gallon of fuel—plus lower total operating costs as the result of more time on the job—less time in the shop.

Four cycle operation and Cummins' unique injection system permit use of cheaper, heavy-grade No. 2 fuel oil. Besides this, rugged construction and advanced engineering design make every Cummins Diesel a standout on the toughest jobs.

Stop in and see your nearest Cummins dealer or write for the Cummins general catalog or for specification sheets pertaining to individual models.

CUMMINS

CUMMINS ENGINE COMPANY, INC.
Columbus, Indiana

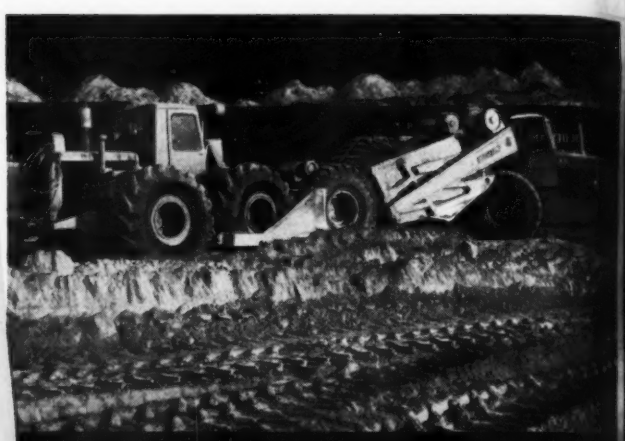
CONDENSED SPECIFICATIONS

MODELS	A-600	HR-400	JBS-600	H-600	HR-600	HRBB-600	HS-600	NH-600	HRS-600	NHS-600	NHRS-600	NVH-1200	NVHS-1200	L-600	LR-600
Cylinders . . .	6	4	6	6	6	6	6	6	6	6	6	12	12	6	6
Bore	4"	5⅛"	4⅛"	4⅞"	5⅛"	5⅛"	4⅞"	5⅛"	5⅛"	5⅛"	5⅛"	5⅛"	5⅛"	7"	7¼"
Stroke	5"	6"	5"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	10"	10"
Disp. (Cu. In.) .	377	495	401	672	743	743	672	743	743	743	743	1486	1486	2309	2477
HP (Max.) . . .	100	110	150	150	165	180	200	200	225	275	300	400	550	250	300
RPM (Max.) . .	2200	1800	2500	1800	1800	2000	1800	2100	1800	2100	2100	2100	2100	1000	1100

TIRES vs CRAWLERS

There's a big difference in PERFORMANCE AND COST on off-track work

Tournatractor push-loads Scrapers . . . pulls Scrapers . . . handles variety of work 2 to 3 times faster than crawler-tractors.



TOURNATRACTOR

	1	2
Rolling on 4 rubber-tired anti-friction wheels LeTourneau units provide:	Free-rolling speeds . . . 19 mph with Tournatractor; 28 mph with Tournapulls. Power transmitted through anti-friction bearings.	"Go-anywhere mobility" . . . drive to any assignment over highways, cross-country, along right-of-way, across tracks without damage.
Driving through an assembly of over 500 wearing parts crawler-tractors give:	High friction and drag, slow forward and reverse speeds (2 to 7 mph). Slow shift with loss of momentum and slow acceleration.	Hauled by trailer or work train job-to-job with delays for loading, blocking, unloading. Can't cross highways or tracks without planking.

D TOURNAPULL 122 hp, 28 mph, 7-yd. Scraper

ing in confined areas is made easy by multi-disc air brakes, plus ability to 90° right or left in 12'8" radius.

Self-loads ballast, gravel, cinders. In slippery going, wheel on firmest footing has 4 times the power of other drive-wheel.

Bowl is unloaded in seconds . . . load can be spread in smooth, controlled layers, or piled. Big rubber tires help compact fill.

Clearing and grading for spur lines. Tournatractor goes anywhere, handles any tractor job, completes more miles at less cost.

Tires straddle rails for emergency switching or spotting. (Unit is pushing these loaded cars up slight grade).

In winter, Tournatractor clears snow from yards, crossings. Its mobility frees engine snow plows for mainline plowing.

186 hp, 19 mph, 8 mph reverse

(mounts all standard tractor attachments)

3 Travel on long-lasting rubber-tired wheels as simple and maintenance-free as those of truck or car.

Over 500 wearing parts in track operate constantly in grinding dirt, require regular replacement.

4 Giant low-pressure tires which absorb shocks, reduce jarring of machine parts, as well as operator.

Rigid track assembly, with constant jolt and shock to machine and operator on any kind of surface.

5 Tires flex for self-cleaning in gumbo. You have no delays to dig out mud, no power loss.

Cleats pick up gumbo, rollers and track assembly gum up, and mud acts as a dragging brake, robbing power.

(8′ dozer, 9′ V-plow available)

Tournapull takes shortest route between jobs . . . travels via highway or right-of-way at speeds up to 28 mph.

Consider these advantages of rubber tires over crawlers next time you're in the market for off-track equipment. Call us . . . we'll be glad to talk them over with you.

Tournapull—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark DPD-266-RE

LeTourneau-Westinghouse Co.

PEORIA, ILLINOIS

Tell us more about ☐ *7-yd. 122 hp D Tournapull* ☐ *19 mph 186 hp Tournatract*

NAME_____

TITLE_____

COMPANY_____

STREET_____

CITY_____ STATE_____

☐ *Would like to have demonstration on our line.*

No. 299 of a series

RAILWAY TRACK and STRUCTURES

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

November 1, 1953

Subject: Editorial Timing

Dear Readers:

How are we to determine when is the best time, all things considered, to publish a particular article? At first thought this may appear to be a question that is easily answered. However, after I have explained some of the considerations involved, I think you will agree that we are dealing with a rather knotty problem.

Railway maintenance-of-way work is pretty much a seasonal proposition. Throughout most of the country the so-called working season extends from early spring to late fall. This is the period when the year's heavy work programs are carried out, but this does not mean that the maintenance forces are idle during the remainder of the year. Much work is done during the cold months, and then there is the matter of coping with emergencies arising from winter storms.

Should this pattern of activities be a guide to us in making up our minds regarding what kind of material to publish in a particular issue? Should we assume, for example, that because the summer months are the growing season articles on weed-control activities will be of particular interest to you at that time? To select another extreme example, should we take it for granted that the winter season is the proper time to run articles on how to dispose of ice and snow? These questions may seem to have obvious answers but before committing ourselves let's explore the situation a little further.

There is no question but what you will be interested in reading an article on weed-control work in June or July because the subject is uppermost in your mind at that time. We must assume, however, that your weed-killing procedures for that year are firmly established and that it is too late to put into effect currently anything new that you may learn about the subject. How much more likely is it that the same article, read in January or February, will give you an opportunity to apply newly acquired knowledge in planning your weed-control program for the coming season?

The same reasoning applies in reverse to articles on fighting snow, and may be extended to cover a great deal of the other material we publish. Although we have given much thought to this matter it is recognized that we are faced with a dilemma that has no ideal solution. It is just one of those matters that must be handled on an individual basis as each article comes up for consideration.

Yours sincerely,

Merwin H. Dick

MHD:lw

Editor

Members: Audit Bureau of Circulations and Associated Business Publications

YOU CAN'T BEAT THESE
NORDBERG
BALLAST RECONDITIONING MACHINES

FOR SPEED ECONOMY AND VERSATILITY

CRIBEX®

Removes material contained in the cribs and deposits it beyond the ends of the ties. Leaves a smooth, uniformly-graded tie floor, completely emptying the crib without damage to ties or rail. Proved in use on more than 25 railroads.

BALLASTEX®

Excavates ballast in the area between the tracks or in the shoulder and disposes it by either wasting to the side or feeding it to the SCREENEX for cleaning. Digs a uniform trench 42-in. wide, or any desired depth to a maximum of 30-in. below top of rail.

SCREENEX®

Takes fouled, excavated ballast from BALLASTEX, passes this material over a vibrating Symons Rod Deck Screen and returns cleaned ballast to the track, intertrack, or shoulder in any desired proportions—wasting the screenings to the side beyond the shoulder.

● With these three outstanding Nordberg machines, you have a combination that can solve virtually *any* ballast reconditioning problem. And what's more . . . this versatile "threesome" will accomplish the job *faster* and at *less* cost.

The speed, economy and versatility of the CRIBEX . . . BALLASTEX . . . SCREENEX trio has been amply proved in service in every kind of ballast. Let us show you how these modern ballast reconditioning machines can save time and money for *you*.

For full details, send for a copy of BULLETIN 174.

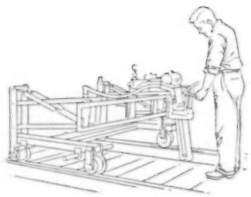
R 751-R2

USE NORDBERG "Mechanical Muscles"* TO DO A BETTER, FASTER MAINTENANCE JOB AT LOWER COST . . .
*Copyright, Nordberg Mfg. Co.

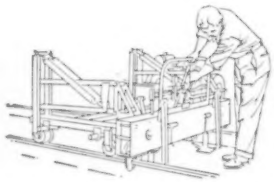
ADZING MACHINE • CRIBEX® • BALLASTEX® • SCREENEX® • SPIKE PULLER • TIE DRILL • GANDY—TIE PULLER AND INSERTER • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS • TRACK SHIFTER • DSL YARD CLEANER • SPIKE HAMMER
DUN-RITE GAGING MACHINE

NORDBERG MFG. CO., *Milwaukee, Wis.*

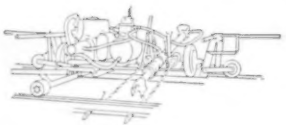
NORDBERG MACHINERY



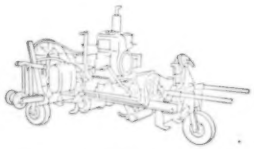
W84 SERIES A HYDRAULIC SPIKE PULLER is designed primarily for use in tie gangs, is also ideal for many other assignments. Light in weight, it features a dependable engine, ball and socket mounted pull assembly. Will pull spikes from either rail without change-over.



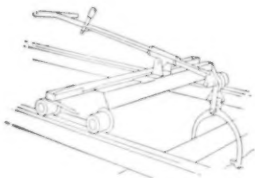
W86 SERIES A HYDRAULIC RAIL LIFTER makes tie plate removal and insertion unusually easy . . . with its spring-counterbalanced lifting arms, welded steel supporting frame and direct-driven hydraulic pump. Can be removed from track by only two men.



W68 HYDRAULIC SERIES A TIE REMOVER removes ties at a rate of approximately one per minute under average operating conditions. Ruggedly built, and designed with a minimum of moving parts, this remarkable unit requires only two men for operation.



W69 SERIES B TIE INSERTER inserts one tie every minute and requires only three men for operation. Maintenance is remarkably low because of its simple design and sound construction. Proven through years of performance on the job.

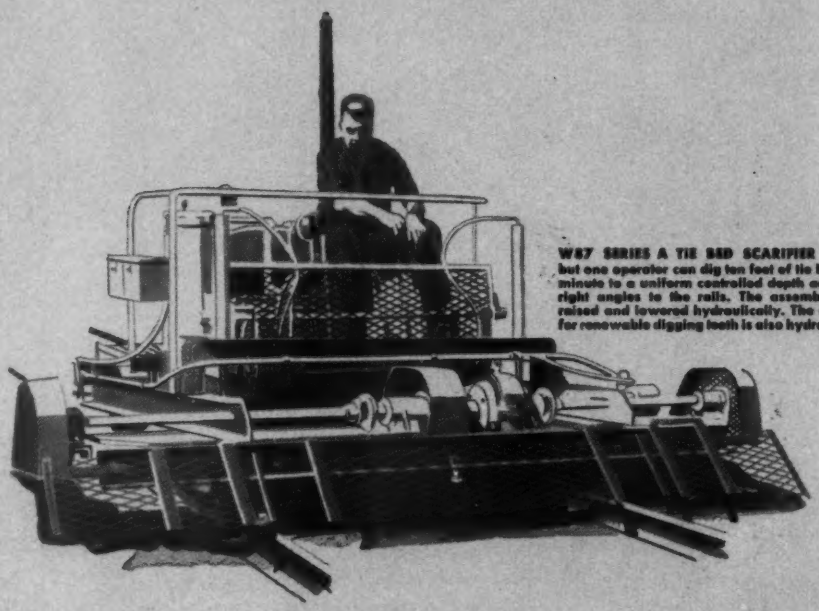


W83 SERIES A TIE NIPPER guarantees fast, efficient action. A simple linkage and lever give positive opening and closing of hooks, assure simple operation and great dependability. Handle can be pivoted to three different positions. Unit is demountable for easy handling.

MANUFACTURERS OF INSPECTION, SECTION AND GANG CARS, HY-RAIL CARS, MOTOR CAR ENGINES, PUSH CARS AND TRAILERS, WHEELS, AXLES AND BEARINGS, BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT.

WHATEVER YOUR NEEDS FOR

tie renewal



W87 SERIES A TIE BED SCARIFIER with but one operator can dig ten feet of tie bed a minute to a uniform controlled depth and at right angles to the rails. The assembly is raised and lowered hydraulically. The drive for renewable digging teeth is also hydraulic.

Fairmont has the answer!

To serve the varying needs of the nation's railroads, Fairmont produces a wide variety of equipment for every major maintenance problem. Whether it be rail inspection, transportation, ballast maintenance, tie renewal, or weed control—there is a Fairmont product specifically engineered to meet your requirements. Each is the result of years of careful design, manufacture and field-testing—built to rigid standards of quality and craftsmanship. The Fairmont equipment pictured on this page, for instance, illustrates clearly the thoroughness with which Fairmont has answered the problem of tie renewal. Individually, these units represent the industry's finest solutions to specific tie renewal assignments—and collectively, they offer the ideal answer to the entire tie renewal operation. They are positive proof that, regardless of your particular needs, you should rely on Fairmont. Naturally, the brief descriptions which we offer here can in no way reveal the full dependability, economy and ease of operation of each of these Fairmont products. We, therefore, invite your personal inquiry on any or all units in which you are interested. We will be delighted to send you complete and detailed information.

FAIRMONT RAILWAY MOTORS, INC.

FAIRMONT, MINNESOTA

RAILWAY TRACK and STRUCTURES

TRADEMARK

VOL. 49, NO. 11 NOVEMBER, 1953

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A Case for Engineering Judgment—Are Your Drivers Licensed?

What We Expect of the Supervisor 1068

H. J. McKenzie, president of the Cotton Belt, tells what management expects of M/W supervisory personnel.

The Value of Personalized Leadership 1070

The roadmasters' view concerning the responsibility of supervisory personnel is expressed by B. F. McDermott of the North Western.

Bridges Can Go "Piggy-Back" Too 1071

And so they can, as was proven by the Canadian National as a new span was skidded onto the old, which was then lowered to the ground.

Transporting Welded Rail 890 Miles 1074

Nothing to it, according to the Northern Pacific which shipped eight half-mile lengths around sharp curves and up and down steep grades.

Lamp Lights Night-Time Surfacing Work 1076

Portable mercury-vapor lamp turns night into day as the Southern double-shifts its track surfacing and smoothing operations.

Enginehouse Gets Fire-Retardant Coating 1078

Take one 12-stall enginehouse converted for diesel storage, one solitary turntable, and a good fire. What have you got? You'll still have all your diesels, says the Burlington, convinced they have the answer.

Fire Protection at Diesel Facilities 1081

Fourth installment of a series by an authority on the subject tells how to protect servicing buildings and repair shops.

News Briefs in Pictures 1085

New Gradall on the Central of New Jersey—King-size coaling station on the N&W—Officets of the new Northwest M/W Club—McFarlane, Cullen-Friestedt, and September—The hood's the thing at the new Rock Island diesel shop—NYC's Harlem bridge reaches halfway mark.

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Heaving Along Shoulders
Roof Fires in Diesel Shops
Computing Track Capacities
Guards with Self-Guarded Frogs
Tools for Water Service Repairmen
Preventing Clogged Weep Holes

News of the Month 1103

MERWIN H. DICK
Editor

R. E. DOVE
Associate Editor

RALPH M. SCHMIDL
Associate Editor

FRED W. SMITH
Business Manager

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Member of the Associated Business Papers (A.B.P.) and of the Audit Bureau of Circulations (A.B.C.), and is indexed by Engineering Index, Inc.

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Compression-Held BRIDGE RAIL

COMPRESSION'S two-way holding prevents splitting of tie daps due to slewed ties. By uniform holding of the rail, these economical anchors eliminate expansion joint maintenance and prevent joint pull-apart.

Bridge engineers particularly have found this dependable two-way holding a vital and economical asset. That's why you see these preferred anchors on many of the foremost railroad bridges of the country.

Let's Get Down to "Brass Tacks"

This is another in a series of factual, down-to-earth advertisements on rail anchors. Some of these are little known facts; others will bear repeating. They all add up to this: that year in and year out — COMPRESSION ANCHORS are a *better* buy!

THE RAILS COMPANY

A Case for Engineering Judgment

Track men have probably never been confronted with a problem more challenging than that of how to get more life out of the lowly crosstie—economically. Consider for a moment some of the factors that must be taken into consideration.

● For one reason or another each railroad is subject to definite limitations in its selection of the species of wood to be used for crossties. The species that are considered more or less ideal for crosstie purposes are generally limited in quantity, which means that kinds of wood must be used which are known to have specific weaknesses. Each specie is a problem in itself, requiring that it be studied individually.

● The problem is not only one of getting the maximum possible service life from the relatively limited number of new ties that are inserted each year, but also of finding ways of protecting the vast number of ties that are already in track.

● During the past few years, the available means for protecting ties have been greatly increased by new developments. These include tie coatings and "smears," tie pads, hold-down fastening, and improved methods of seasoning and treating. Each of these must be evaluated.

Satisfactory resolution of the numerous questions implied by this analysis of the situation will obviously require intensive study. The problem has been receiving such study for a number of years, but to date very little, if any, conclusive information is available on the economies of various methods of tie protection. This fact was brought out recently when a committee tried unsuccessfully to obtain such information.

The reason most frequently given for the lack of information is that insufficient time has elapsed to permit accurate conclusions to be reached. In the meantime, however, ties continue to be taken out of track because of mechanical damage. Perhaps this is a point where engineering judgment, based on such information as is now available, should enter the picture. In that case the railroads might not have to wait years before taking large-scale advantage of the means now available for reducing tie-renewal costs.

Are Your Drivers Licensed?

Do you know if the men who drive your trucks and cars have chauffeurs' or drivers' licenses? Did you see the licenses and have you seen them lately? Are the licenses unsullied by traffic violations, and are they still valid?

The purpose of these questions is to point up the fact that a man is not necessarily a good driver just because he originally was issued a license. On the contrary, he may be a careless driver, prone to having accidents. Even if he has not yet had an accident with a railroad-owned vehicle, he may have had one or more with his own car which, if known, would make a supervisor want to question the driver to determine if he is the right man for that particular railroad job.

It would seem advisable for a supervisor to make sure that only a qualified and *authorized* driver should be at the wheel of any railroad-owned highway vehicle. It is not at all uncommon for a foreman to dispatch an unauthorized man, who can be spared at the moment, on an errand with the truck to fetch some tool or material. How much wiser it would be to have an authorized driver carry out this errand? If this is done the railroad knows that it has taken steps to minimize the possibility of its vehicles becoming involved in accidents.

Although injuries occurring to employees from accidents involving highway vehicles are not reportable to the I.C.C., it is inconceivable that supervisors will not have a record of the accidents involving vehicles under their jurisdiction. In such files a record can be maintained on the driving ability of each driver, as well as the date of the last time his license was reviewed.

Management Speaks...

What We Expect of the Supervisor

According to the author, a good supervisor:

- **Must know how to get the job done.**
- **Must be able to get along with people.**
- **Must know the job and how to direct work.**
- **Must be resourceful in getting work done.**
- **Must be loyal to superiors and company.**
- **Must be a leader and have enthusiasm.**

By H. J. McKenzie
President, Cotton Belt

● There is not a more loyal or dependable group of officers or supervisors on our railroads today than is found in the maintenance-of-way departments. Besides being loyal and dependable, most of the M/W supervisors have a very keen sense of humor, and if it wasn't for this fact I imagine there would be more ulcers and high blood pressure than actually exists among them. I recall one roadmaster with more than his share of this sense of humor. One of his main expressions was: "Boss, give me plenty of rock and plenty of wood and just get out of my way." I asked him one time while on an inspection trip if he was getting all of the serviceable life out of his track ties. He said, "Oh yes, I have now got to the point where I just jack up the rail and let the wind blow them out."

Following terrific rains in his territory, we were expecting high water at one of our river crossings and kept wiring him every few hours inquiring about the stage of the river. He was beginning to get tired answering all of these wires and finally wired back as follows: "In spite of everything I can do the river continues to rise."

When asked to speak on the subject, "What Does Management Expect of the Supervisor," I thought back over my years of experience and association with maintenance-of-way supervisors and came to the conclusion that they were about all that we could ask for and would just about fill the bill. I then asked myself the question "What should supervisors expect in return from management?" I came to the conclusion that there are just as many obligations on our part, and I hope that we, as management, are not falling too far short on our end of the deal.

A Little General Manager

It is most difficult to draw a fine line that would separate management from supervisors for, in the last analysis, our supervisors are the backbone of management. A good supervisor is actually a little general manager on his district and should consider his job in that light. He should assume the responsibilities and direct the affairs coming under his supervision in the same manner that a superintendent would for his division or a general manager for the entire railroad. He has the same responsibilities in regard to his organization as does higher management. He must see that the proper man is placed in charge of the work coming under his jurisdiction. One of the most difficult things confronting us today is to select the right man for the job, to maintain a good organization, and to see that each officer, supervisor or foreman performs and functions in his position as is intended.

The most important thing that management expects of the supervisor is "*to get the job done*"—not to just do it "any old way," but to do it efficiently, safely and econonomically, as well as expeditiously. They expect him to carry out specific instructions when he has them and, when he doesn't, to handle the work in accordance with standard practices and policies, and to the best of his ability.

Good Human Relations

Management expects the supervisor to maintain the proper relations with officers and other supervisors in his department, as well as with other departments of the railroad. They want the supervisor to use good human relations in his contacts with his subordinates. He should maintain good public relations with the patrons of the railroad and with the community in which he resides. He *must* be able to get along with people, and right here I would like to say that I don't know of any more important requirement of a supervisor or an officer, than "getting along with people."

A supervisor must be a leader and must enjoy the full confidence of both his superiors and those working under his direction. He must have enthusiasm and be able to instill it in his subordinates.

Management expects a supervisor to be qualified, to know his job and know how to direct the work under his jurisdiction. He must have these qualifications if he expects to accomplish his objectives and main-

This article is abstracted from an address presented by Mr. McKenzie at Chicago on September 15 before a joint session of the Roadmasters' and Bridge and Building conventions.

tain the respect of his fellow supervisors and of the employees. He must know the problems of his men and this knowledge cannot be obtained by sitting behind a desk. Management should realize this also, and the need for close contact with their people.

Each year I make a motor-car inspection trip over every foot of our railroad, stopping at each section gang, extra gang and bridge outfit, at all stations, terminals and offices. This affords me an opportunity of meeting and knowing our people, to become familiar with their problems, to have a better knowledge of the property, and to obtain a clear conception of work being done, as well as work that should be undertaken. I would highly recommend such trips by management in company with their supervisors.

Resourcefulness Needed

Management expects their supervisors to be resourceful and to find ways and means of getting the job done when allowances for expenditures are low. They expect the supervisors to think in terms of mechanization and to get away from the old idea of "Let me have another fifty or one hundred men to do the job." They want to find ways and means of doing the job on a more permanent basis and at less cost. This is most necessary if we are to successfully meet the competition which exists in the transportation field today.

Management needs a supervisor that will say "no" when he should say "no," and not take the position that he will ask the "old man" for it and let him take the responsibility for turning it down. A supervisor should, however, hold out for what he knows is right and not have the attitude: "If it is someone else's decision it is no skin off of my nose." A good supervisor will not say: "We will patch it up to last as long as I am here and then we will let the next man worry about it."

It would not be possible to mention all that management might expect of supervisors, but I would like to close this side of the picture by emphasizing the need for loyalty to your superior and to your company. If you are going to work for a man, give him all you've got, do not drag your feet or pull in the opposite direction. If he is unreasonable, go to him, talk it out and the chances are that you will come to an agreement and both of you will be better off for having had the understanding.

To both management and supervisors, I would like to quote a few lines from one of our great leaders in industry:

"You can buy a man's time; you can buy a man's physical presence at a given place; you can even buy a measured number of skilled muscular motions per hour or day. But you cannot buy enthusiasm; you cannot buy loyalty; you cannot buy initiative; you cannot buy the devotion of their hearts, minds and souls. *You simply have to earn these things.*"

What Should Supervisors Expect of Management?

According to Mr. McKenzie there are certain things a supervisor has a right to expect of management. That portion of his address dealing with this subject is presented here. Although these remarks are primarily directed at management they may very well be taken as a formula for application by engineering and maintenance-of-way officers and supervisors when dealing with their subordinates.—Editor

● Management should be practical in their demands of supervisors and not ask for things that they know won't work out, or have work done that they know will not be economical, useful and practical. Management should understand the supervisor's problems and be helpful rather than critical, and we should all remember that many people have ceased to do their best because they have been told only of their worst. Where the problems are beyond the control of the particular supervisor, management should have the work coordinated between departments to insure teamwork in getting the job done with the least interference. Management, as well as supervisors, should not ask their subordinates to do something that they would not do themselves, and should lead their men and not drive them.

Management should not expect the impossible of supervisors—they are not magicians, and cannot be expected to do something with nothing. Management should work out their budgets and programs on a basis of what can be done with money, equipment, material and labor that is available. If the program is more than can be handled with the given staff of supervisors, then more supervision should be obtained. The cost of supervision is such a small percentage of the cost of the job, yet the lack of it can so greatly affect the total expense.

Management should be honest with their supervisors and not make promises that they know they cannot fulfill or have any intention of carrying out.

Just because a man is a railroad supervisor should not mean that he has to work seven days a week and never have a vacation. This is as outmoded as the old horse and buggy days. A supervisor should not be required to work long, arduous hours except in cases of emergency and should be able to be a normal citizen in his community, to attend church, to take part in civic affairs, and to have some time with his family. A supervisor is entitled to recognition for his accomplishments and management should see that he gets credit where credit is due him and that his efforts are appreciated.

Management should make him realize that he is actually a part of management and that they want to work closely with him and need his help and suggestions. A supervisor is entitled to good working conditions and environments, and management should see that he has this as well as being properly compensated for the position he holds. Management should instill confidence in the supervisor and develop in him an adequate sense of security in relation to his superiors and to management itself.

I could go on and on and still not cover all of management's responsibilities to supervisors, but in summarizing would like to say that there is nothing more wonderful than a well-organized company where management, the supervisor, foremen and employees all respect each other and are loyally working towards a common cause and interest. It is so necessary that management and the supervisor have the proper consideration and respect for each other and work together as a team to get the job done.

A Roadmaster Speaks . . .

On Value of Personalized Leadership

From his 29 years of experience with track maintenance, in positions ranging from track laborer to roadmaster, Mr. McDermott has formed definite opinions on the supervisor's responsibility in relation to the safety and well-being of his men. He has put his methods into practice and reports it to produce highly satisfactory results.

By B. F. McDermott

Roadmaster
Chicago & North Western
Brookings, S. D.

● There is no longer a place on our railroads for the old fashioned, hit-or-miss method of supervision. The "get-'em-young, treat-'em-rough and tell-them-nothing" policy is now obsolete; but a few supervisors are still using the "fear treatment" in an effort to control men and prevent accidents. The "get-tough" policy and "fear-of-consequences" theory are still being used in many cases. This type of supervision must eventually be dispensed with.

A major responsibility of any supervisor is the building up of morale within his own organization. It is a proven fact that when the morale of any organization is low, the progress of work slows up and personal injury casualties are high. In the first place, men can't be driven and then expected to give their whole-hearted cooperation. Men respect a leader but not a driver. Every supervisor should be able to say: "My foremen work with me, not for me." In other words, "we" accomplished this fine record and not "I."

Confidence Must Be Mutual

● Our men need leadership. To obtain such leadership a good supervisor must have confidence in his men and they in turn will have confidence in him. They need assurance that they are doing the right thing. When men have faith and trust in their leader, they lead easily. Open criticism with no corrective action will reduce the possibilities of accident prevention. We have all heard many times on the railroad the roaring voice of a supervisor or foreman: "What in the hell are you trying to do? Commit suicide?"

If a man is doing his work unsafely or incorrectly, the fault lies with the supervisor or foreman. A man should be taught to do each job correctly; then little criticism will be necessary. When criticism is necessary, the supervisor should keep his mouth shut until he knows what he is talking about. He should get all of the facts, then take the man aside and privately suggest the safe method of doing the job that will result in safe performance.

Suggestive criticism and correction produce safe work cooperation among your men and, in addition, eliminate any embarrassment on the part of the worker. He in turn will respect you for your tactful handling of the matter.

A supervisor should recognize a good job well done by additional consideration on his part. If this is done honestly and fairly, he will certainly receive a much higher degree of cooperation from his men.

Praise Is Important

● The human element in the relationship between the supervisor and his men is the prime factor today in the success of his organization to the ultimate end of controlling and eliminating personal injuries. One of the most important is a kind word or a word of praise to a man in recognition of a job well done. Too many supervisors wish to take credit for all of the good work accomplished on their territory. Every good supervisor knows that a good job of laying rail or of building a bridge is the result of teamwork, and when a kind word of praise is given in front of the worker and his foreman, it indicates fair play. It not only gives the foreman a "lift" but in addition serves to raise the prestige of the supervisor in the eyes of his immediate superior.

Safety consciousness is at all times a major job for every supervisor. When an employee becomes involved in an accident, his morale is immediately lowered. That is the time for the supervisor to take a personal interest in the man's welfare. He should let the man know that he wants him to get well quickly and to get back on the job as soon as possible. He should be made to feel that he is needed and is an important part of the railroad. After all, we all like and want affection and attention, and most of us react in similar fashion.

Let us say then, in conclusion, that the prime determining factor in bringing about a reduction in personal injuries will be through *personalizing* our supervision on that portion of the railroad of which we are in charge, as this will bring us closer to the basic causes of such human behavior which make men violate safety rules.

My theory, of course, is not altogether original and in reality is a combination of reactions formed from past experience and the application of knowledge learned from a study of human behavior from a psychological viewpoint.

With closed shops, union shops and a marked trend during the past few years to more or less stifle individual initiative, there has crept into our way of life a feeling of indifference on the part of the railroad worker. Although our railroads are becoming more mechanized, we cannot treat our human workers as we do a machine. Railroad managements, of course, recognize this and there are studies being made by many roads, including my own, to approach this problem from a psychological morale-building angle.

I believe that our workers are basically as faithful today as they ever were in their devotion to duty. I feel that the answer to this problem is to take a *personal* interest in each worker and make him feel that he is an important part of the organization, not just a "cog of the wheel."

NEW SPAN, fully assembled, has been shifted onto the running rails in preparation for being hauled by the lidgerwood . . .

Bridges Can Go "Piggy-Back" Too

In a recent renewal project on the Canadian National, involving the replacement of a deck-truss span with a through truss, the replacement span was skidded longitudinally into place over the old one which was then lowered to the ground. The details are given in this article which also tells how world events played a role in the selection of the new span.

● Strange as it may seem, international events figured importantly in a recent bridge-renewal job on the Canadian National. In fact, they determined the nature of the span selected to replace the old structure. Perhaps of greater interest to railway bridge engineers, however, is the unusual procedure that was used when replacing the old span with the new one.

It happened something like this:

The Guelph-Palmerston line of the CNR in Ontario was carried over the Conestogo river by a skewed deck-truss span 151 ft. 6 in. long. This was a pin-connected structure in which all tension members were composed of eye-bars. Because the old span was not adequate

. . . INTO POSITION over the old through-truss span. During trip channel guides were fastened to three floorbeams at each end of the new span.

"PIGGY BACK" arrangement of new span over old structure is shown here. Abutments have been altered as necessary and . . .

. . . FALSEWORK BENTS have been placed under the first panel points at each end of the old span in preparation for . . .

for present-day loadings the railroad was recently faced with the problem of renewing it. Ordinarily, the strictly engineering aspects of the situation would have dictated the replacement of the old span with another deck-truss span of heavier construction. The clearances were such as to present no problem, and this would have been the most economical thing to do, assuming that the replacement span would be constructed new for the particular location.

Role of World Events

It is at this point that international events took a hand in the situation. Sometime previously the Canadian Bridge Company had fabricated a number of bridge spans destined for delivery to the Nationalist government of China. However, before they could be delivered control of the Chinese government was taken over by another government.

When this happened, ownership of the spans reverted to the Crown Assets Disposal Corporation, an agency of the Canadian government. The spans then became available for purchase in Canada at a figure considerably below the market value and a number of them were acquired by the Canadian National. It happened that one of these structures, a through-truss span, being 155 ft. 4 in. long, center-to-center of the end bearings, was of the proper length required for the Conestogo River crossing. It was decided therefore to use it for that purpose.

The conventional practice in carrying out bridge jobs of this type is to erect the new span on falsework to support the track while the existing span is being dismantled and the new span erected. In this case, however, the nature of the substrata and of the river bottom, which contains numerous boulders, was such as to preclude the driving of timber piles. Steel H-piles could have been driven for the falsework but the cost would have been high.

In view of these considerations it was decided to follow a rather unusual procedure in erecting and installing the new span. This involved the erection of the new span about a quarter of a mile from the bridge site and approximately 30 ft. from the center line of the track. For this purpose, the ground at the erection site was leveled and heavy timber blocking was placed on it to carry the span during erection. The necessary camber was provided by inserting wedges under the panel points. The span was completely riveted prior to erection.

How New Span Was Moved

The work of moving the new bridge to the crossing and of inserting it in position was carried out on a Saturday and Sunday. All traffic was suspended at 6:00 a.m. on Saturday and two of the road's heaviest auxiliary cranes were moved into position on the mainline track at either end of the new span. The span was then jacked up and skid rails were placed under the end bearings and over on top of the running rails.

After the span had been lowered onto the transverse skid rails, the next step was to move it into position on the running rails. For this purpose, a cable from each of the cranes was fastened to the end floorbeams to which a special temporary harness had been previously applied. The cables worked through steel snatch blocks connected to steel H-pile "deadmen" which had previously been driven at a suitable location on the far side of the track. Tension in the cables, exerted by the cranes, then caused the span to move laterally into position over the running rails.

When this step had been completed the cranes, utilizing a special cable harness, were then used to raise the span sufficiently to clear the skid rails to permit their removal. Previously, channel skids had been arc-welded to the bottoms of three floorbeams at each end of the span. The placing of skids on the three floorbeams was necessary to reduce the load concentration on the running rails. The channel skids also prevented the span from getting out of line while it was being dragged to the bridge site.

By this time the running rails had been greased between the span and the bridge site. The moving of the bridge on the rails was carried out with the aid of a lidgerwood winch, which is normally used for unloading ballast from cars. The cable of the winch was connected to a special harness fastened to the end floorbeam of the span. One of the auxiliary cranes was used at the far end to assist and to control the movement of the span.

Once the lidgerwood had gotten the span into motion, and owing to a heavy down grade towards the bridge site, the span actually gained momentum without any further assistance from the lidgerwood, and the auxiliary crane was then called on to act as a brake.

At the bridge site the new span was moved into position and superimposed over the existing deck-truss span. Using the auxiliary cranes the new span was then raised sufficiently to clear the running rails, and to permit the shoe plates of the span to be placed on temporary timber blocking while the work of removing the running rails and guardrails and the timber deck of the existing span was in progress.

The next step was to lower the existing span to the ground. In preparation for this step safety bents

. . . CUTTING OFF the four end posts of the old structure so span would clear the abutments when . . .

. . . BEING LOWERED to ground. Lowering was done by cranes through cables and rigging attached to top chords of the new span. Next . . .

were erected under the first panel point at each end of the span, and tight wedges were driven. The existing span was then connected to the top chords of the new span by means of wire rope rigging. This rigging ran through two triple sheave blocks suspended from each corner. So that the old span would clear the abutments while being lowered to the ground it was necessary to burn off the four corners of this span. Next, a strain was taken on the cables from the two auxiliary cranes which had been moved away from the bridge the required distance. The safety bents were then removed and the span was lowered to the ground by moving the auxiliary cranes toward the bridge by means of locomotives coupled to them.

The final step was the positioning of the new bridge. This was done by first lifting the span from the temporary supports by means of the two cranes. The timber blocking was then removed and the pier members were set into position on the concrete bridge seats, after which the span was lowered into its final position. The ties, running rails and guardrails were then placed on the deck of the new span. Traffic over the structure was resumed on Sunday afternoon.

The existing stone masonry abutments were reused, but it was necessary to alter them because the existing span had skewed ends and the new span required wider bridge seats. The alterations in the abutments were made with the aid of steel H-piles encased in pressure-grouted concrete which were well dowelled to the original stone masonry structure.

The work described in this article was carried out under the general supervision of K. Huffman, chief engineer of the Canadian National's Central region, and E. J. Napier, bridge engineer.

. . . NEW SPAN, which had previously been supported on blocking, was lowered into position on concrete bridge seats placed on abutments. After span had reached . . .

. . . ITS FINAL POSITION the ties, running rails and guardrails were installed on the deck. Traffic was suspended 6 a.m. Saturday and resumed Sunday afternoon.

Sharp Curves and Steep Grades Do Not Prevent

Transporting Welded Rails 890 Miles

By the longest haul on record, the Northern Pacific demonstrates that welded rails can be safely transported in half-mile lengths around sharp curves and up and down mountain grades.

● When the existing 131-lb. rail in Stampede tunnel met two limiting conditions established by the Northern Pacific for removing it from the track, plans were made for its renewal. The two conditions, either one of which was a sufficient reason in itself for rail renewal, were the frequent occurrence of head-and-web separations and the vertical head wear which had reached the limit for main-track service.

The 132-lb. section was first considered because its fillet design should preclude head-and-web-separation failures. However, the depths of head of the 131-lb. and the 132-lb. sections are about the same, so no increased life of the 132-lb. section could be anticipated insofar as head wear is concerned. This led to the decision to use the 140-lb. rail section for this tunnel relay because its fillet design is also such as to preclude head-and-web-separation failures, and its depth is about ¼ in. more than the 132-lb. section. The NP believes that this greater depth, if it increased the rail service life by only one-third, will produce a most satisfactory return on an increased investment of about six per cent. It was also decided to weld this new rail into continuous lengths of approximately one-half mile each.

Cost Study Is Made

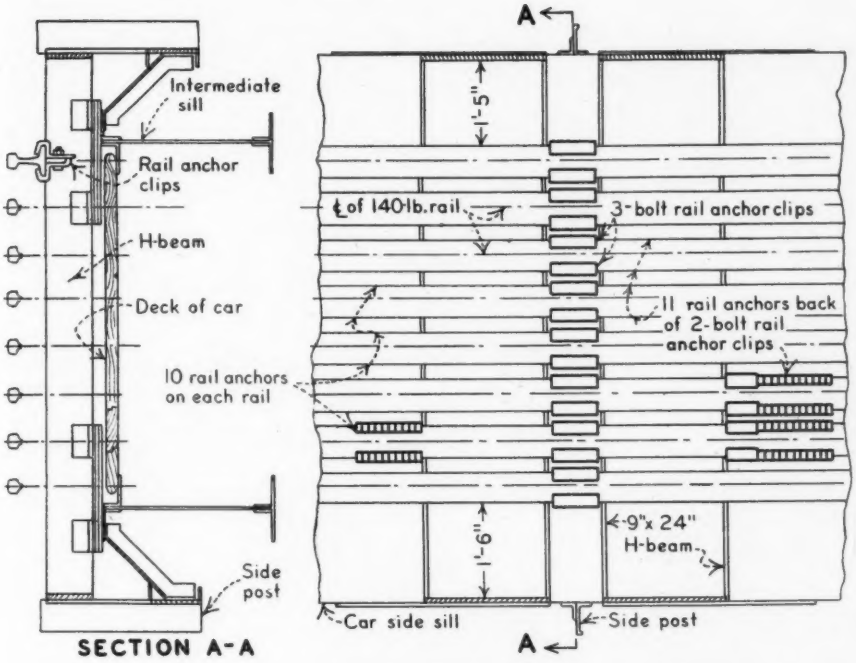
The next consideration was where to set up the welding plant. The road already had an assembly line set-up at Big Timber, Mont., where it had been welding rail for its rail programs for the last three years. It also had an experienced and efficient welding crew at this point. A study was made of this situation, which showed that the cost of welding the rail at the assembly-line set-up at Big Timber and hauling it 889 miles by a special work train to Stampede, Wash. was far less than the cost of moving and erecting the welding plant at Stampede plus the anticipated increased welding costs while breaking in an inexperienced welding crew.

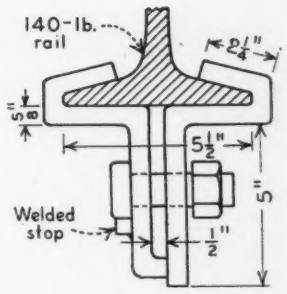
As a result of the cost study, the 140-lb. rails were welded at the existing plant into eight strings; six of 2,490 lin. ft. and two of 2,413 lin. ft. Together, these lengths totaled just under two track miles—about the length of Stampede tunnel.

There is no previous record of welded rails of this length having been transported for so long a distance, so the NP engineers had to start their thinking from scratch. In the 889-mile distance, the line crosses three mountain ranges having grades up to 2.2 per cent and numerous sharp curves, many of 10 deg. and one of 11 deg.

The eight strings of welded rail were loaded onto 55 drop-end Hart cars, on which the rails were supported on rollers, and one flat car having rollers at its rear end. This last car was added because the Hart cars did not provide sufficient length to contain the 2,490-ft. strings.

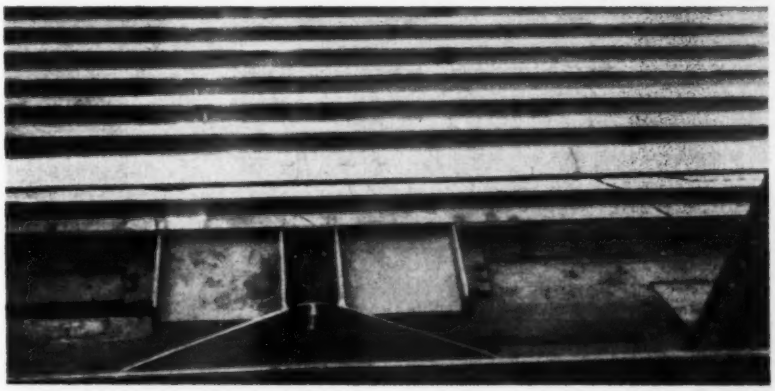
Two more cars at each end were added to this train to safeguard the engine and caboose in the event that the rail might move endwise. At the head end of the train the





LONGITUDINAL MOVEMENT of the rails on the train was prevented by special anchorage applied to each rail at only one point—the middle car of the train. The sides of two H-beams, laid on their sides and fastened to the car floor, served as the bearing points for the special anchor clips and rail anchors.

BELOW—Anchorage assembly. (Opposite direction to diagram)



locomotive tender was followed by a car of gravel and an idler flat car. At the rear end, a car of gravel preceded the caboose, and another idler flat car was inserted between the car of gravel and the rail-carrying flat car.

No special provisions were made for preventing lateral movement of the rails on curves, and it turned out that the shoulders on the rollers were entirely adequate to prevent this movement.

However, substantial anchorage was provided on one car about at the middle of the train to prevent longitudinal movement of the rails. Two 9-in. by 24-in. H-beams, 8 ft. 6 in. long, were laid flatwise transversely on the car floor and spaced 10 in. apart. These H-beams were firmly fastened to the car side and intermediate sills by welding. Two-piece rail clips, 9 in. long, were devised for clamping onto the base of rail. In section these clip parts fitted tightly around the periphery of the railbase flange and, slightly apart, dropped below the center of the rail, where they were fastened tightly together by three 1-in. bolts. The rail clips projected down into the 10-in. opening between the H-beams and prevented the rail from moving more than 1 in. in either direction.

In addition to these rail clips, each rail had 10 conventional rail anchors applied so as to impinge against the other side of the forward H-beam and each other, and 6-in. rail clips plus 11 conventional rail anchors applied so as to impinge against the other side of the rear H-beam and each other. An observer rode this anchor car at all times that the train was in motion, and he reported that there seemed to be little tendency for the rail to move endwise.

Certain precautions were taken to insure the safe handling of the train, which ran only during daylight hours. Its maximum speed was restricted to 25 mph, except down mountain grades where it was 20 mph. Also, where speed-reduction signs required lower speeds than those mentioned, the train speed was restricted to 10 mph less than the posted signs.

The road foreman of engines of each division traversed by the train was required to ride the locomotive over his territory. At each subdivision point, a careful inspection was made to be sure that the train's equipment was in the best possible condition.

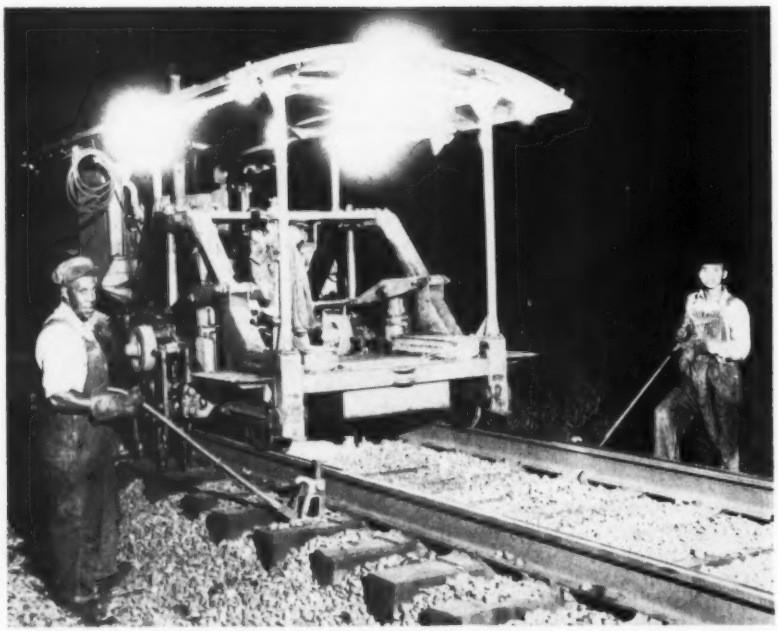
An intercommunication system, similar to that which the road uses on snow-plow trains, was installed between the anchor car and the engine. Hence, if the observer on the anchor car noticed any rail movement that indicated trouble, he could contact the engineer.

It is reported that these special instructions for the movement of the train were followed closely, and that no difficulties of any kind were encountered during the entire trip. H. R. Peterson, chief engineer, said: "I think this movement should demonstrate that long lengths of welded rail can be safely and easily moved over any distance, around any curvature, and up and down any grades on any railroad in the United States."

AREA OF WORK ahead of the tamping machine is brightly illuminated by mobile light carried on push car, except that . . .

Portable Mercury-Vapor Lamp

Lights Night-Time Surfacing Work

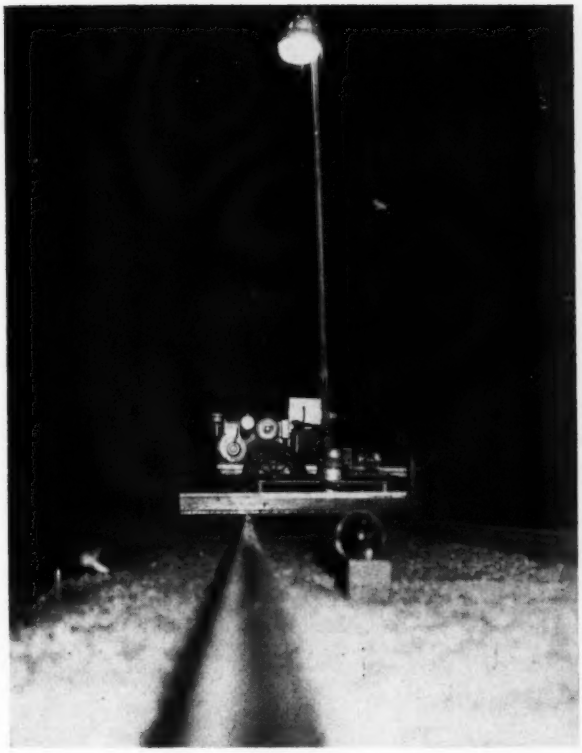


NIGHTTIME surfacing is reported to have proved so satisfactory that the road plans to do this work on a double-shift basis throughout the year.

● In December 1952 the Southern began to double-shift its track-surfacing and smoothing operations and has been following this practice ever since. This means, of course, that the work is carried on 16 hr. each day. The double-shift was inaugurated to get more productive hours of surfacing and smoothing without increasing the capital investment in expensive equipment.

In order to bring about the double-shifting of the surfacing work, proper lighting arrangements were required for the night shift. An extensive study was made in planning the best illumination. A practical mobile light was necessary to provide the illumination required by the foreman for placing his jacks and pulling and leveling the track for tamping. The problem was solved by mounting a single mercury-vapor lamp and its generating unit on a two-wheel, pneumatic tired cart.

The cart was designed to be handled either along the roadbed or up in the track, the wheels being



. . . THE SPOT BOARD is spot-lighted by dry-cell battery.

LOOKING BACK toward tamper from point ahead of mobile light.

sufficient in diameter to allow the cart to be pulled over rails and through switches without difficulty. For on-track operation the portable lighting unit is mounted on a special push car. It is pulled along the roadbed or the track by the men who handle the track jacks.

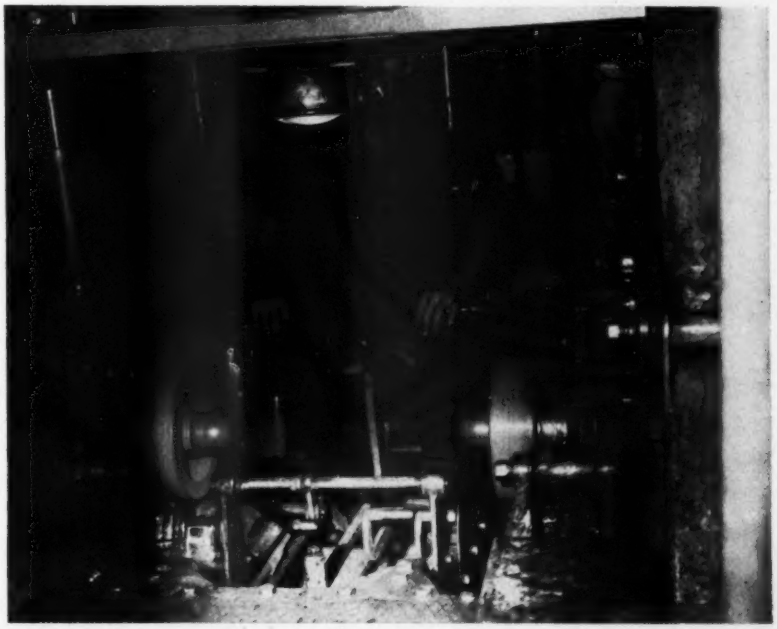
The lamp is suspended 20 ft. above the top of rail by means of a white pine extension ladder. The ladder stands in the middle of the cart and is held in an upright position by four small steel guy cables fastened to the corners of the cart.

The mercury-vapor lamp is raised and lowered by a cord rope. When not in use the lamp is stored in a protective container. The ladder is also removed from the cart when the lamp is not being used or when the outfit is being moved to a new location some distance away.

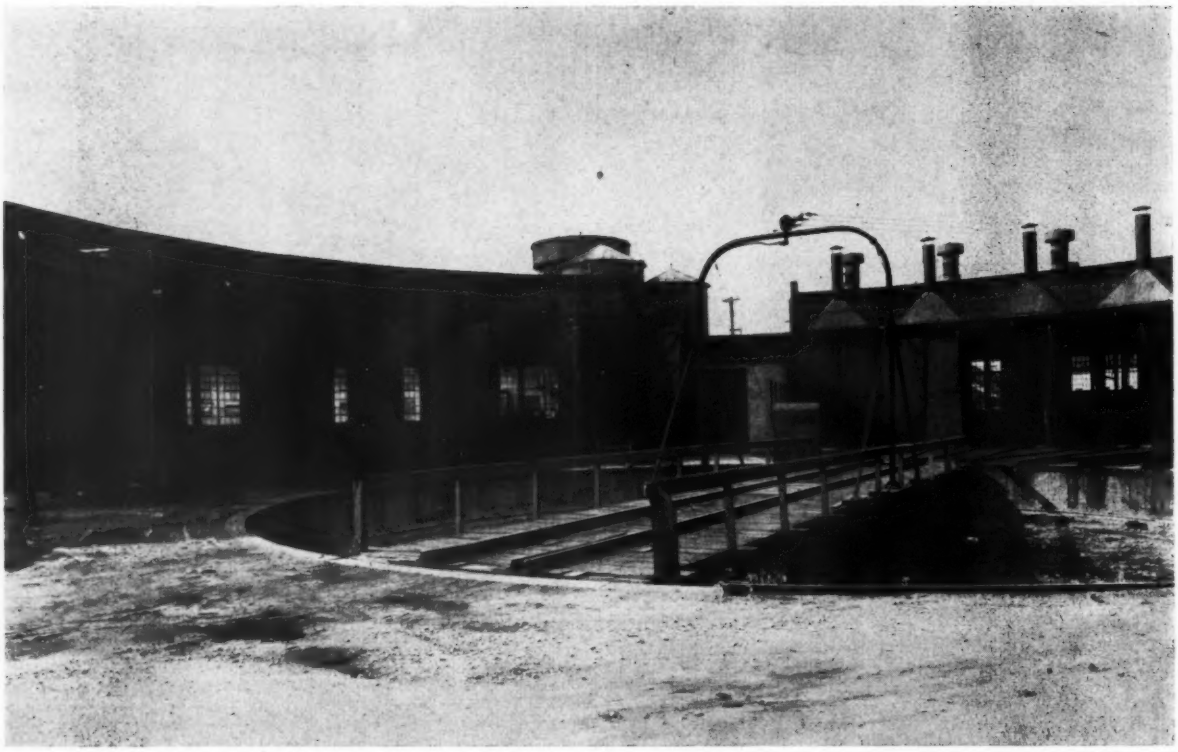
The vapor lamp is sufficient to illuminate all the surfacing work in front of the tamping machine except the spot board which is in advance of the jacks. The spot board is illuminated by a battery lamp.

Ballast regulators are also used on the night shift for regulating and dressing the ballast in conjunction with the surfacing work. For local illumination around the tampers and the ballast regulators, sealed-beam lamps have been mounted on these machines and operate from their own storage batteries.

It has not been necessary to make any substantial changes in the lighting arrangements. It is reported that night surfacing has been so satisfactory that the railroad plans to continue operating on a two-shift-per-day basis throughout the year. The quality and volume of work done at night is said to be as good as the work done in daylight.

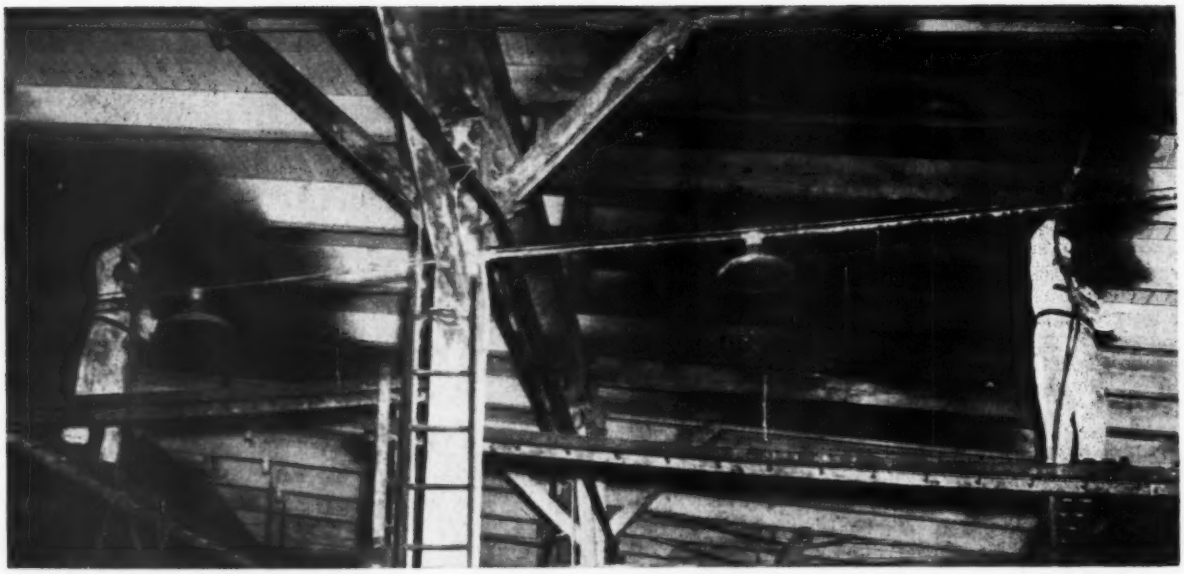


LOCAL LIGHTING around Matisa tamper is obtained by sealed-beam lamps mounted in strategic positions on the machine. These are powered by storage batteries.



ROUNDHOUSE, located at Aurora, Ill., which the Burlington converted into a running-repair shop for diesel power. In case of an outbreak of fire, the turntable is the only available means for evacuating the locomotives from the house.

Converted Steam Enginehouse



SPRAY GUNS, similar to those used when applying conventional oil paints, were employed to apply the fire-retardant coating to the wood surface which had been cleansed of grime and old paint by cleaning with low-pressure steam.

Gets Fire-Retardant Coating

With millions of dollars of diesel locomotives housed overnight in a converted roundhouse, and with a turntable as the only means of evacuating these units in the event of a fire, the Burlington made a relatively minor investment in the application of a fire-retardant coating to the timber roof deck and its supports.

● When an old enginehouse is converted from the maintenance of steam to diesel power, the hazard of fire becomes a matter of more than ordinary concern. And, when the only way to remove the diesel units from the enginehouse is over a turn-table, which would require at least two movements of the table to remove even one locomotive from the house, as is the situation with the Burlington's enginehouse at Aurora, Ill., the danger from fire assumes even greater importance.

After the Burlington switched over about three years ago from steam to diesel power for its Chicago suburban trains, it needed a building to service and make running repairs to the diesel units, and for storing them overnight until required for the city-bound morning trains. The 12-stall roundhouse, now no longer needed for steam locomotives, seemed the logical structure for this purpose, and could be converted at much less expense than a new building could be constructed.

A decision was made to alter the existing roundhouse. The old floor and engine pits were torn out and replaced by a new concrete floor and deeper inspection pits. Elevated working platforms were constructed and lube oil and water supply lines installed. Additional ventilators were inserted in the roof to allow the fumes from engine testing to escape, and an improved lighting system was installed.

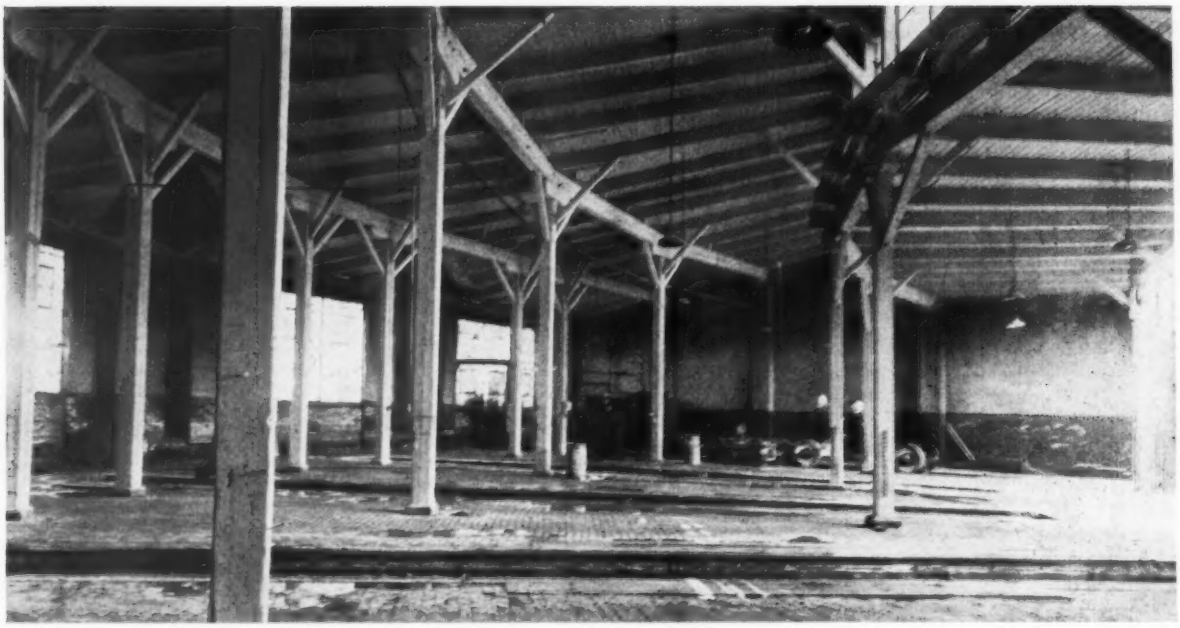
Fire Retardant Demonstrated

Not long ago, a number of the road's engineering and maintenance officers witnessed a demonstration of the Albi fire-protective coating. This material is manufactured by the Albi Manufacturing Company, Rockville, Conn. It is a fire retardant that is applied the same as ordinary paint and is available in various pigmented colors. It also bears the label of the Underwriter's Laboratories,

BEFORE recent work was carried out, the underside of the roof deck showed a coal-dust and soot-encrusted coating that was being further covered with oil.

CLEANING was done with low-pressure steam having a caustic in solution. Dirt and old paint washed off to expose a clean wood surface.

AFTER cleaning and applying Albi fire-retardant coating, the seven-stall section was considerably brightened and was insurance against rapid spread of fire.



WORK WAS COMPLETED in approximately six weeks due to the fact that the contractor had unobstructed use of the house during the daytime hours. The view here shows the five-stall section upon completion of the work.

Inc., as well as several other research laboratories.

One day a maintenance officer of the road who had observed the demonstration, re-visited the Aurora enginehouse and took note of its fire-protection facilities and of its susceptibility to fire. Several fire hydrants, connected to the city water main, were within easy reach. In addition, the enginehouse was equipped with four fire hoses having 75 psi city water pressure and fog nozzles, as well as two portable carbon-dioxide-dispersing machines for oil fires. Also, a brick fire wall divided the house into two parts, one with five stalls and the other with seven.

Timber-Frame Construction

Looking up, he saw a typical enginehouse roof—3-in. deck plank, 6-in. by 14-in. joists, and 12-in. by 12-in. stringers and posts with knee braces—all wood, except for the tar-and-gravel surface.

He also noted that the underside of the roof deck and its supports were covered with dried-up paint, coal dust and soot from steam locomotives, and were now being further coated with a thin film of unburned diesel oil. He realized that a fire once started, as it easily could from a spark from the running engines, would spread rapidly.

At night, every stall except one is occupied by a diesel locomotive, representing *en toto* millions of dollars in investment. Also at night, when the servicing of the locomotives had been completed, there is a period when few employees are in attendance, so that it was not only possible but highly probable that a fire could get a good start before fire-fighting equipment could be brought into effective action, with the result that the premises could very easily become untenable even before one locomotive could be evacuated from the house. After surveying this situation it occurred to the engineering officer that the fire hazard could be greatly reduced by the application of a fire-retardant coating. And it did not take long for his management to reach the same conclusion and authorize the work.

Steam-Cleaned First

A contract was let to W. P. Slattery Company, Chicago, which firm is the designated applicator for Albi in the mid-western territory. The contractor had unobstructed daytime use of the enginehouse for his work, which he completed in six weeks. Beginning with the five-stall section, the contractor worked on one or two stalls at one time, first removing the soot and oil coating, which was as much as ¼ in. thick, by ejecting low-pressure steam through a pipe having a flared nozzle with a slotted orifice. A caustic solution was fed into the steam in pre-determined amounts to assist in the cleaning. This method successfully removed the old coating exposing the clean wood surface.

The cleaned surface was allowed to dry for at least 24 hr., after which the first coat of protective material, designated "Albi PC," was applied at the rate of 1 gal. per 200 sq. ft. The material for this coat is an emulsion that can be brushed, sprayed or applied with a roller. At least 24 hr. was allowed for the drying of the first coat. When it had dried, a second coat, designated "Albi 99," was applied at the same rate as the first. This material is an oil-type fire-retardant. Both coats were applied with spray guns.

Has Pleasing Appearance

The contract covered the cleaning and application of the fire-retardant coating to the underside of the roof and all supporting timbers, such as purlins, timber columns, and knee braces, at a cost of less than 18 cents a square foot. A gray color was selected which presents a pleasing appearance. The railroad believes that, in the event of a fire, the retardant coating will so hamper its progress that there will be enough time not only to marshal forces and equipment to cope effectively with it, but also to rescue all of the diesel units parked in the enginehouse.

Atlantic Coast Line Photo

CONCRETE PLATFORMS are among the features of this modern diesel repair shop.

Fire Protection at Diesel Facilities . . .

Part IV— Servicing Buildings and Repair Shops

The problem of minimizing the fire hazard in and about diesel repair shops is one that starts with the design and construction of the facility. In this installment Mr. Wicker discusses the hazards involved and suggests ways of overcoming them. The next installment, to appear in the December issue, will discuss the training of personnel in the use of fire-protection equipment.

By W. S. Wicker
Chief Engineer
Transportation Mutual Insurance Company
Philadelphia, Pa.

● It was originally believed that very few hazards existed in connection with diesel locomotive operation and maintenance, that such operations could be coordinated with and superimposed on the handling and maintenance of steam power with only minor adjustments and that steam locomotive facilities were readily adaptable to the servicing and maintenance of diesel power. Experience has proven these ideas to be fallacious and that entirely new types of buildings and facilities are required for the efficient and economical maintenance and operation of diesel equipment.

Avoid Use of Roundhouses

The use of roundhouses for repairing and servicing diesel locomotives is a practice to be avoided, particularly because the bottleneck presented by the turntable militates against the rapid removal of such equipment in case of fire. In the transition stage where both steam and diesel locomotives are handled and serviced concurrently, many railroads, recognizing the possibility of greater fire damage to diesel units than to steam locomotives, provide separate structures for diesel locomotives or handle them on outside tracks.

The earlier methods of handling diesel locomotives consisted largely

(*Continued on next page*)

Desirable Fire Protection for Diesel Shops

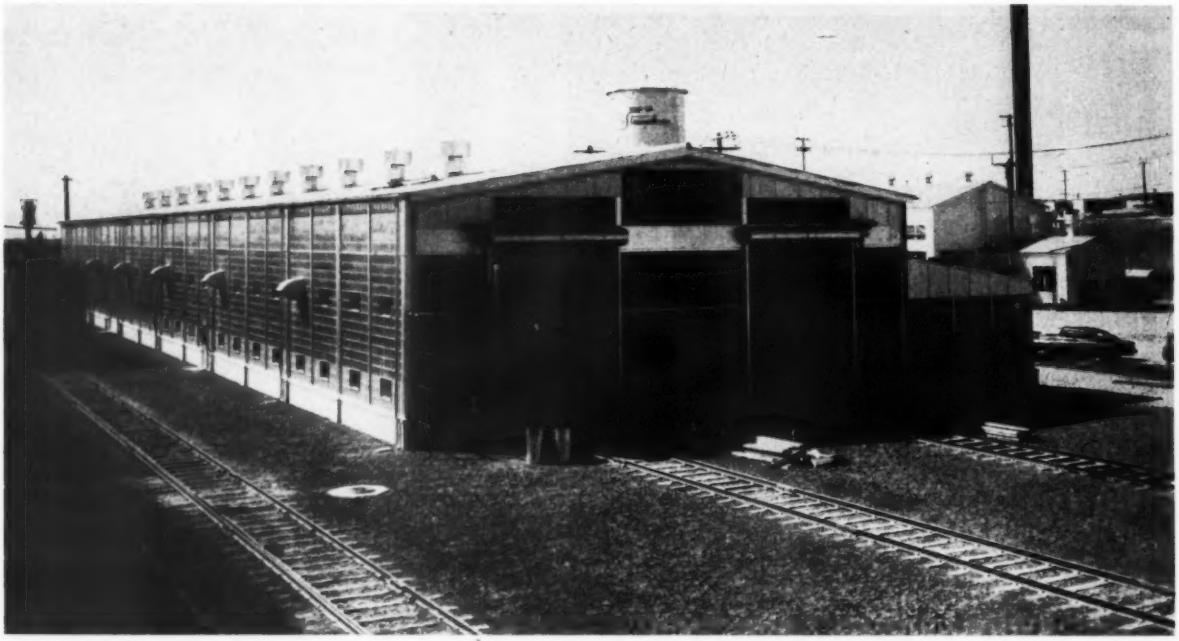
● The provision of outside yard fire protection as well as adequate inside protection should be considered as an integral part of the plans for any new diesel shop layout. For the fire protection of diesel servicing and repair facilities the cost of adequate outside water mains should be included in the original estimate and such mains installed at the time of construction. This applies to the alteration of existing buildings as well as to new construction. At many of the newer diesel shops adequate attention is given to all phases of fire protection. The small percentage of the cost of fire protection for such facilities, compared with the values at risk, makes this cost a justifiable expenditure.

Equipment for fighting Class "A" fires has been largely replaced by equipment suitable for use on Class "B" or Class "C" fires. Dry-chemical and carbon-dioxide extinguishers and high-pressure fog producing equipment have been found necessary for adequate protection. The use of fog further provides some protection to operators by cooling the atmosphere adjacent to the nozzle. Fog is an excellent medium when water is available because of unlimited supply and the fact that almost everyone is familiar with its use. The preferred and most satisfactory fog installations consist of high-pressure pumps with 100 ft. to 125 ft. of 1-in. rubber hose capable of producing either fog or solid streams. The fog pumps are provided in sufficient number so that any part of a building may be reached. The pumps start automatically when the nozzles are lifted from cradles.

Where fog installations cannot be provided, 150-lb. dry-chemical or 50-lb. and 75-lb. CO_2 extinguishers are used for major protection. Any primary protection provided must necessarily be supplemented with an adequate number of first-aid fire-protection appliances such as 30-lb. dry-chemical or 20-lb. CO_2 extinguishers as well as 4-lb. dry-chemical extinguishers for portable welding units.

Automatic fire-alarm systems are used in some diesel shop properties. So far as is known sprinkler installations have not been considered except in a few older installations where fires in oil-saturated wooden buildings and platforms proved them to be not altogether satisfactory.

One of the facts to be given consideration in connection with the change to diesel power is the reduction of personnel and the consequential effect on shop fire brigades. It is, therefore, necessary to review fire brigades and fire-fighting activities at all plants where such changes have been made in order to restore the brigades to their former strength and effectiveness or to train them to an even greater degree of efficiency.



DIESEL SHOP of fire-resistive construction on Union Pacific. Good ventilation is assured by 22 exhaust hoods and fans.

of using roundhouses and other steam locomotive shop facilities with minimum or no changes to adapt them to diesel operation. Thus were found diesel locomotives on tracks adjacent to live steam engines, coal-burning shop heaters in diesel servicing sections, oil-soaked wood floors and other practices which, in the light of present-day knowledge of diesel shop hazards, would seem to be courting disaster.

If the two types of power are handled in the same building a wall of non-combustible construction separating the areas assigned to each type of locomotive is a desirable installation to minimize exposure. It is not good practice to handle both diesel and steam power in the same sections. The separating wall or partition may be designed to be movable at a later date in case of future expansion. Steel framing and steel or corrugated asbestos sheating will permit relocation or removal when the number of steam locomotives is reduced or replaced altogether.

Many railroads have found it advantageous to divorce diesel locomotive servicing and maintenance completely from steam handling facilities. In such cases new diesel shop plants have been provided at locations entirely separate from steam facilities with buildings and facilities for the complete servicing and maintenance of diesel locomotives. The buildings are generally of fire-resistive construction and are well spaced to eliminate exposure.

Modern repair shops range from brick and steel buildings with steel trusses and wood roof decking to buildings of fire-resistive construction throughout. The concrete floors in some properties are covered with a vinyl sealer to prevent oil saturation and to facilitate cleaning. Concrete working platforms are preferred, although some solid or expanded metal platforms are provided. Where solid metal platforms are found they are usually protected with non-skid safety treads. The least desirable type of working platform is of wood construction, but this type is quite frequently used. These platforms become oil-saturated all too soon and constitute a permanent hazard that will materially contribute to the intensity and spread of a fire.

Through tracks are desirable in diesel repair and servicing shops, although of necessity some of the tracks have stub ends. If tracks are accessible without turntable or transfer-table bottle-necks, such of the units as are in a condition to run can, in case of fire, be moved under their own power. Other units which are on trucks may be moved by diesel switchers or stationary car pullers where available. The design of shop buildings should, therefore, be such that in case of fire the maximum number of units may be removed with minimum effort and delay. The trend is toward the longitudinal shop with through or stub tracks, or both, and with smaller service rooms separated from the main shop building by approved fire walls having all openings equipped with suitable fire doors. A building of this design is considered less susceptible to serious fire damage to the structure and the equipment housed in it than any other type.

Separation of Facilities

In the design of new diesel repair and servicing shops, particular attention should be paid to locating them well away from steam locomotive facilities with sufficient room to take care of expansion without causing any undue exposure to or by existing buildings. In such designs, the provision of standard fire walls with approved fire doors for necessary openings should be considered for separating the traction motor and electric shops, dip tank and impregnating vat rooms, oil reclamation sections, filter cleaning rooms, storehouses, paint spray rooms, battery charging and repair shops, and similar hazardous occupancies from the main shop building and from each other.

When both diesel and steam locomotives are handled in buildings without the physical separation afforded by a fire wall or at least a semi-standard fire stop, it is possible for the unconsumed oil vapor discharged from diesel units to become ignited in the absence of air exhaust systems with damage to structure

DIESEL SHOPS should be placed some distance from steam locomotive facilities.

and contents, including diesel locomotives.

Where the operations of several maintenance departments are housed in one building, their separation by fire walls is desirable since each presents a hazard of its own. Oil fumes from the engine repair shop, varnish fumes from the electrical repair shop, or sparks from machine shop tools or from oxy-acetylene and electric welding in the body shop, are some of the hazards to be considered. Dip tanks, impregnating vats and bake ovens are inherent hazards in diesel shops. Their installation in separate fire-resistive rooms or buildings, cut off from the main shop by fire walls, will eliminate the exposure. The installation of automatic fire protection equipment in such occupancies will further reduce the possibility of a major fire loss. Where the magnitude of the operations will justify the expenditures, the provision of separate buildings for paint shops, with spray canopies, automatic sprinklers and suitable first-aid fire-protection equipment will considerably reduce the exposure hazards.

Preventing Roof Fires

It has been heretofore assumed that the roof heights of diesel repair shops precluded the necessity of providing non-combustible roof decking. Consideration was not given to the possible communication of fire from combustible vapors, grease accumulations or an abnormal mass of superheated air from operations at a lower level which subsequent experience has shown to be responsible for several roof fires. The removal of vapors from diesel shops requires the installation of electrically driven exhaust and intake fans in roof ventilators to secure circulation of air. Where they are used conspicuous signs are generally provided at the controlling switches reading: IN CASE OF FIRE SHUT OFF FAN. Even with these provisions the sheathing and trusses soon become coated with oil and carbon accumulations and regular cleaning is required. The newer diesel repair shops are of fire-resistive construction and some of them have concrete slab or concrete panel roof decking on steel trusses. Fire-resistive construction is the best and safest type, although many roundhouses, machine and erecting shops and other buildings with steel trusses and wood roof decking are being converted to diesel repair shops.

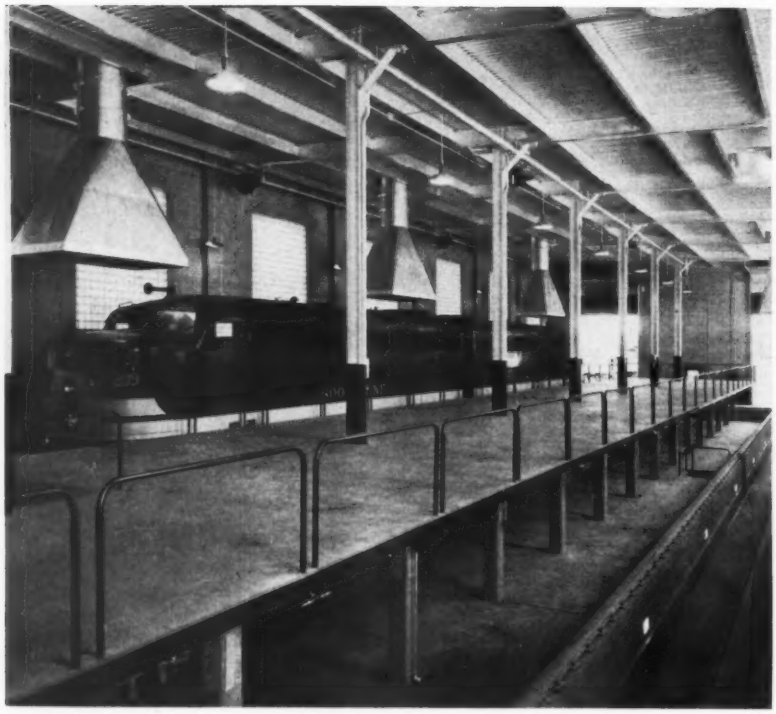
Oily deposits have contributed to the origin and spread of fire in diesel repair shops. Such deposits result from the condensation of oil-borne vapor from exhaust stacks and steam generators of diesel locomotives on cold surfaces and cover the entire roof area. Other deposits are on platforms, floors and in pits and are due to leakage, spillage, carelessness and other causes. Dust and other finely divided combustible substances usually combine with the oil to produce a quick-burning fuel enabling fires to start from small sparks or similar ignition sources which would not normally be hazardous on clean premises. Once started in such deposits fire spreads rapidly. Fires have been started by electrical short circuits in pits and on floors of engine-testing sections where deposits of grease, oil and other combustible material have accumulated. Sawdust used to soak up oil and solvents produces a dangerous condition. Smoking, cutting torches and other sources of open flame may cause ignition. Thorough cleaning of premises and the use of approved oil absorbents are standard practices. Open containers for flammable liquids are unsafe.

Preferred Features

At outlying locations where small facilities are needed to house diesel road switchers or diesel locomotives, one or two-stall metal, corrugated-asbestos or concrete block buildings are usually provided. Concrete foundations and floors should be used. Steel frame and roof trusses, non-combustible roof decks and linings and approved indirect heating installations are preferred features. When facilities are supposed to be temporary and are installed in enginehouses minimum protection must be provided and the diesel section separated from the steam section by a fire-retardant partition faced with asbestos board and without openings. Where roundhouses and machine or boiler shops are partly converted to diesel servicing buildings and shops, approved fire walls should separate the diesel and steam sections. If openings must be provided approved fire doors should be installed.

Electrical installations for diesel repair shop and servicing buildings should conform to the Code ruling for the occupancies, the repair and servicing sections being considered in a class with garages, requiring installations for Class I, Division 2, locations below servicing platforms. Inspection pits and tracks should be equipped with explosion-proof recessed lights. Vapor-tight fixtures are required for lights on extension cords used around diesel engine compartments and crank cases.

Design and construction or remodeling of structures for repairing and cleaning diesel locomotives merit careful attention. Oil saturated wood platforms, open pans of



STEEL FRAMING and non-combustible roof decks are preferred features.

oil on platforms and floors, and cardboard sheets used in place of small metal dollies for working in close spaces under locomotives add to the hazards. Welding is frequently necessary and oil-soaked wood platforms are undesirable around such open flames. Welding should be done only after the foreman has determined that oil and vapor hazards are reduced to a minimum. Suitable fire extinguishers should be immediately available at all welding operations.

The removal of oil and grease from diesel machinery and equipment introduces certain hazards. This cleaning is variously done by mechanical means such as scraping or rubbing; by application of an alkaline solution to neutralize or saponify the grease and make it soluble in water or steam; by use of hot chemicals, such as caustic soda or potash of suitable dilution, or some of the proprietary cleaners; and by use of solvents. Gasoline and naphtha, formerly used for cleaning small parts, have been largely replaced by mineral spirits or other so-called safety solvents. Even with these solvents approved safety cans and wash tanks with covers controlled by fusible links are recommended.

In a closed area any solvent emitting flammable vapors at any temperature may cause a flash fire or explosion when proper proportions are reached. Gasoline, diesel oil and similar vapors, being heavier than air, will spread to the lowest parts or depressions in the area and remain until dispersed by air currents. Flammable vapors also are produced by spray paints or varnish coatings using volatile vehicles for quick evaporation. Such operations should therefore be done in separate sections or suitably equipped separate buildings. Cleaning solvents free from components that will produce flammable vapors are safest. Alkaline materials are non-hazardous with regard to flash fires. Carbon tetrachloride is too expensive except for special work. Where flammable liquids are still used, care must be exercised to avoid ignition from open flame or sparks. Mechanical removal of vapors by means of ventilators to outside of building is necessary at some locations. Frequent removal of combustible deposits of solid material from ventilators, hoods, booths, ducts and the roof trusses and sheathing is necessary.

Disposal of Waste Oil

One of the big problems in connection with the operation of diesel shops and servicing facilities is the disposal of waste oil. At most of the earlier installations such oil was drained to the nearest ditch. With continued drainage, however, the ditches and eventually other larger areas soon become oil polluted and objections to the continued draining of waste oil may be expected from property owners and in aggravated cases from the various governing bodies. In newer shop plants several methods of oil separation are used. These range from an ordinary pit with regular burning of oil dipped from the surface, to oil separators equipped with baffles with oil removed manually or by small pump. The newest method of preventing pollution of streams and of exposing railroad properties to burning waste oil is by the installation of a modern mechanical oil separator built above ground on a concrete mat. The latest type, conforming to all federal and state requirements, will positively prevent waste oil flowing beyond the oil reclaiming facilities. The simplicity and accessibility of such an oil separating system makes the operation much more satisfactory than the old type below-ground separators with their extra equipment and structures. The provision of waste-oil-reclaiming facilities is a "must" in connection with new diesel shop installations. Such facilities are furthermore desirable at older installations where inadequate methods of preventing pollution and exposure to fire exist. All older installations merit review and study with the object of improving the handling and reclaiming of waste oil when possible.

The transition from coal as fuel has created an entirely new conception of fire protection for shop plan where diesel locomotives have introduced the hazards of oil fuel. At a large number of shop properties the provision of proper outside as well as inside fire protection equipment was apparently not considered as part of the original plan but has been introduced as an afterthought. For this reason the composite practices of several railroads are submitted in the accompanying separate article as desirable methods of procedure in connection with the protection of diesel repair shops.

Such are the essential features of construction, maintenance and protection of diesel repair shops. With modern fire-resistive buildings, definite plans for the removal of equipment, adequate water facilities, sufficient first-aid fire-protection equipment of proper types, careful supervision and well-trained fire brigades, fire losses in these facilities will be reduced to a minimum.

A CAPACITY of 2,000 TONS of locomotive coal makes this coaling station at Bluefield, W. Va., what the N&W terms "the most complete railroad coaling station of its size in the world." In addition, this reinforced concrete structure will hold 150 tons of slack coal (separated for use in the road's stationary boilers), 50 tons of dry, screened sand, and 150 tons of wet sand. Four locomotives can be serviced at one time, in 9 min. or less, with coal, sand and water.

News Briefs in Pictures . . .

NEW GRADALL, designed especially for railroad maintenance-of-way work (for complete description of this machine see *RT&S*, October, page 993), is shown here at work on the . . .

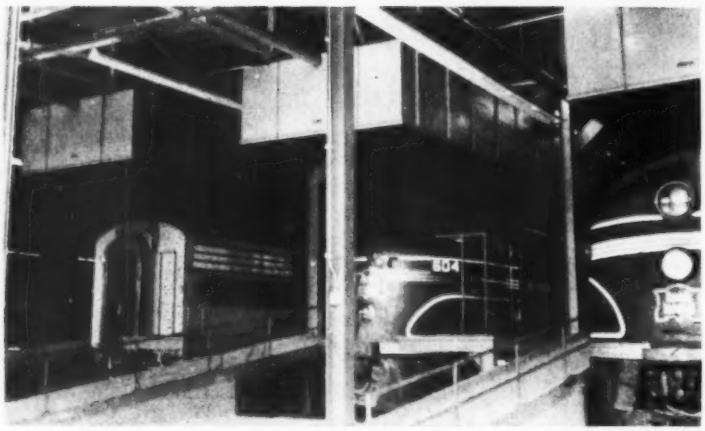
. . . CENTRAL OF NEW JERSEY where it is being employed in yard cleaning and embankment restoration work. Note the reach attainable with the telescoping boom.

OFFICERS ELECTED at the recent organizational meeting of the new Northwest Maintenance of Way Club at St. Paul are (left to right): George G. Prest, executive secretary (president, George G. Prest Company, St. Paul); J. M. Gustafson, 2nd vice-president (bridge engineer, Minneapolis & St. Louis, Minneapolis); H. R. Peterson, 1st vice-president (chief engineer, Northern Pacific, St. Paul); T. R. Klingel, president (principal assistant engineer, Soo Line, Minneapolis); and L. C. Blanchard, secretary-treasurer (roadmaster, Milwaukee Road, Minneapolis). Further details on page 1108.

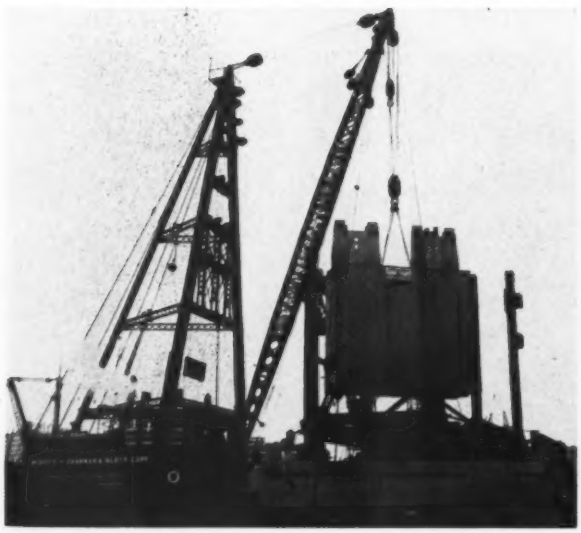
News Briefs in Pictures...

(Continued)

CONGRATULATIONS were in order (above) at the Cullen-Friestedt exhibit at the Coliseum, Chicago, in September. The occasion: H. M. McFarlane's promotion to vice-president in charge of sales (see October RT&S, p. 1016). From left to right: George Achuff, president, Achuff Railroad Supply Company; C. K. Luyster, district sales manager, Woodings-Verona Tool Works; Mr. McFarlane; E. D. Cowlin, general manager, Reliance division, Eaton Manufacturing Company; R. F. Davis, Woodings-Verona Tool Works; and C. J. Bronez of Cullen-Friestedt.

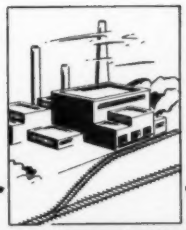


LEFT—New diesel shop recently put into service by the Rock Island at 47th Street and Wentworth Ave., in Chicago, features six exhaust canopies —one over each service track. The units, each approximately 140 ft. long, can accommodate two diesel locomotives and are equipped with two exhaust fans each.



NEW YORK CENTRAL'S twin lift bridge over the Harlem River, leading into the 125th Street station, New York, nears half completion as the contractor's floating derrick hoists a 77-ton steel counter weight casing into place (above). The westerly span, shown at right, is expected to be completed next August. Bridge will go into service sometime in 1956.

WIDE WORLD PHOTO

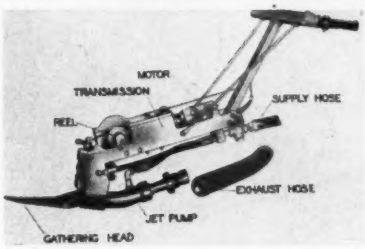


PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices

BALLAST RENOVATOR

A SELF-PROPELLED portable type ballast renovator, designated the Kribak off-track ballast cleaner, has recently been introduced by the Index Corporation, Fort Worth, Texas. This unit obtains its power from a mobile-type air compressor of 10-cfm. capacity, and is designed to clean and tamp stone, cinder or slag ballast on main track and through turnouts without any interference to trains. Two Kribaks, working off one compressor, are said to be able to renovate an entire crib in from 45 to 90 sec., depending on the condition of the ballast.



The major components of the Kribak are a main frame, reciprocating gathering head, jet eductor, two-speed transmission, reel assembly, handle bars and controls, and a safety-type rail clamp equipped with cable.

To operate the machine, the operator places the rail clamp over the ball of the rail, points the gathering head into the ballast, and opens the main air valve, which admits air to the reciprocating mechanism and creates the tamping action. It also admits air to an air motor at the rear of the main frame. The operator then engages the air motor with the transmission by pressing the left-hand lever on the handle bar, causing the slack of the cable to be reeled in rapidly, after which the pull on the cable automatically shifts the transmission into low gear and pulls the Kribak forward in the ballast.

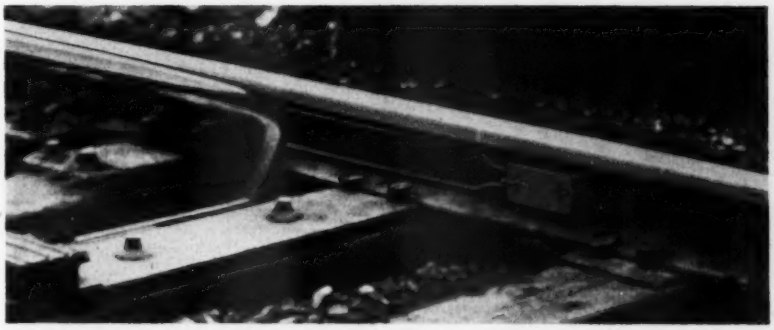
The tamping action of the gathering head is said to permit the machine to enter ballast in any condition, and the powerful vacuum created by the jet eductor is said to pull the dirt out of the loosened ballast and into the gathering head. The dirt then travels past the ventura into the eductor hose and is thrown out of the hose onto the right of way.

The gathering head travels through the crib until it extends a foot inside the rail, and at a depth of 4 in. below the rail. If it is desired to go deeper, a second pass of the machine will drive the gathering head to the desired depth with a similar penetration beyond the rail.

IMPROVED ELECTRIC SWITCH HEATERS

THE MISSCO hairpin loop type electric switch heater has recently been announced by the Mississippi Supply Company, Chicago. The one standard unit is designed to fit all track conditions and existing switch facilities including simple turnouts, double slips, spring switches, derail switches, and movable frogs. One, two, or more units are installed on the inside of the web of each stock rail depending on the length of the switch.

The manufacturer claims that Missco electric switch heaters are especially designed and built to withstand the vibration and extreme weather conditions encountered in railroad track service. They are manufactured exclusively for the Mississippi Supply Company by Cutler-Hammer, Inc., using the same type of tubular heater that has been proved in severe industrial service. The heating tube is formed into a hairpin loop and both ends brazed into a bronze terminal box. The Missco heater is also available as a continuous tube



heater which can be installed under the head of the stock rail and manufactured to order in the exact length specified.

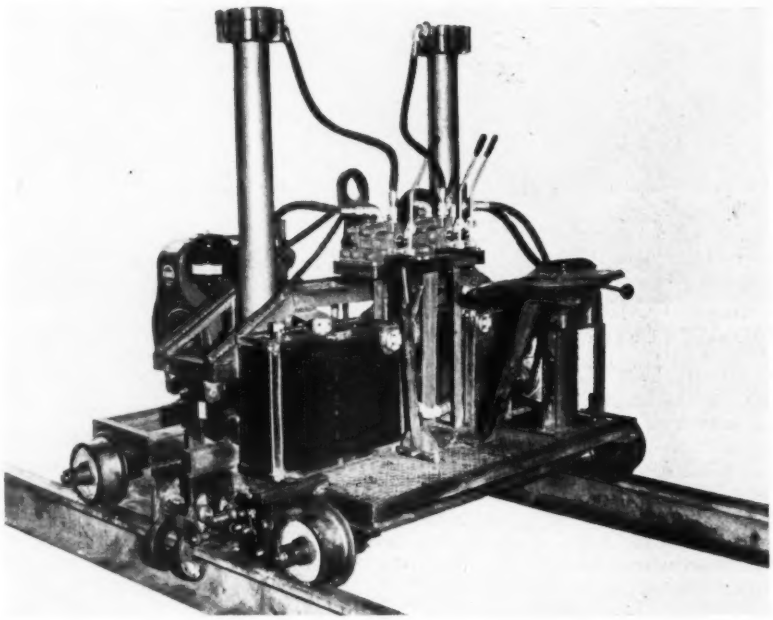
Missco heaters are made to operate on 220 volts, ac-dc, with a rated capacity of 300 watts per foot of rail. Each unit is supplied as a complete package ready to install and connect. The unit is attached to the inside of the web of each stock rail and located so the terminal box and first heater clamp are clear of the closed point. Another clamp is placed close to the end of the loop and the remainder of the clamps distributed at approximately 1-ft. intervals along the 93¼-in. length of the unit. When more than one loop is used on a single stock rail, the second is located so that its loop is one to two feet from the loop of the first with the terminal box away from the point so that it does not interfere with closing the switch.

Depending on local conditions, the operation of Missco electric switch heaters can be handled by remote or manual control. More than one switch installation can be handled from the same electric switch. The manufacturer advises that it is desirable to provide the option of connecting two units in series so that when weather conditions do not warrant the full heating capacity of the units less power will be used.

HYDRAULIC TRACK JACK

THE KERSHAW Manufacturing Company, Montgomery, Ala., has recently announced the production of the Kershaw Hydraulic Track Jack—a device designed to speed up track-jacking operations in surfacing and retimbering gangs.

The machine is hydraulically operated by one man and has a working speed of 0 to 3 mph. and a travelling speed of 0 to 12 mph. The jack is equipped with automatic rail dogs which will operate on any section of rail as the foot is lowered between the ties. A special turntable permits set-off of the machine in approximately 1 to 1½ min. The unit is of welded steel construction throughout, has a 14-hp. air-cooled engine, has a lift capacity of 12 tons and weighs 2,000 lb. It is 55 in. long, 77½ in. wide, and extends 60½ in. above the rail.



JACK CARRIER

MATISA Equipment Corporation, Chicago, has introduced a self-propelled car, designated the Jack Carrier, for use with its Matisa Tamper for toting track jacks between the tamping machine and the advance track-raising gang. The use of this car entails the mounting of several small accessories on the front end of the tamping machine, including two low platforms, one at each corner, on which workmen place the jacks released as the tamping progresses.

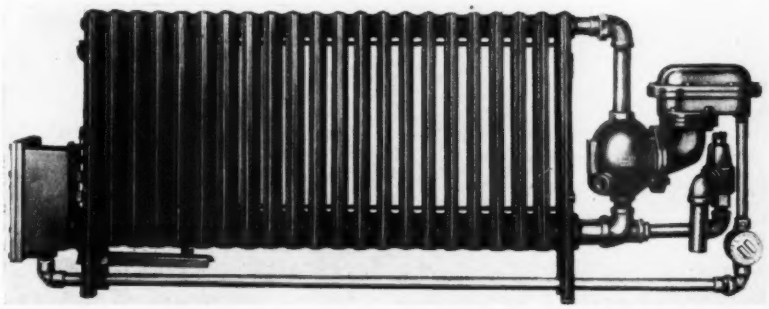
When three jacks have been loaded on each of these platforms, a signal is given to the raising gang to start the car moving on the rails toward the tamper by releasing a clutch on the carrier. The car is so designed that it does not strike any of the jacks in use.

While a fourth jack is being withdrawn and placed on each platform, the steel-bodied car moves down the track at about 3 mph. until it bumps into the tamper. This contact not only releases catches on the jack platforms, causing them to collapse and drop the eight jacks onto the carrier, but it also activates a reversing mechanism which starts the carrier back toward the raising gang.

As the loaded carrier starts the return trip, a man steps aboard, unloads the eight jacks at pre-dug jack holes along the track, then throws the clutch into neutral and the car stops to await the signal for another shuttle trip.

To prevent the carrier from running away, skates may be applied on the rails so that if the car runs onto them its drive wheels will spin harmlessly until the clutch is thrown into neutral.

With this device and a Matisa Tamper, only 10 men, including the foreman, are said to be required to raise and tamp track. To facilitate getting the jack carrier on and off the track, a swinging support arm is attached to the front of the tamper and, by means of this arm and a chain block, the unit is lifted until it can be moved either onto the rails or into the clear beside the track.



ELECTRIC RADIATOR

DESIGNED especially for heating those areas housing volatile products, the Burnham Corporation, Irvington, N.Y., has announced the availability of an explosion-proof radiator. The new unit is a self-contained heat maker which has the approval of Underwriter's Laboratories, Inc., for Class 1—Group D atmospheres, which include those containing gasoline, naptha, petrol, butane, propane, alcohol, acetane, benzol, lacquer solvent vapors and natural gas, as well as for Class 2—Group F and G atmospheres containing carbon black, coal, coke, flour, starch and grain dusts.

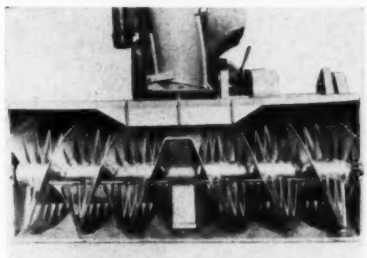
These radiators are available in three models for both 110-volts and 220-volts, and may also be obtained for 440 volts. Depending upon the model, the units use from 2,000 to 3,000 watts for the heating elements and have from 28 to 42 sq. ft. of radiation.

Each radiator is equipped with a dual-activated thermostat, which controls both internal pressure and room temperature, and is sealed in a cast-iron explosion-proof housing. No electric wiring or mechanism is exposed and all external wiring is conduit enclosed. It also has a float-operated switch which acts automatically to shut off the current if the water level should, for one reason or another, drop below the float level.

As a final measure of protection it is provided with a mechanical relief valve, which will open automatically and relieve internal pressure if by any chance the pressure should reach 30 psi.

ROTARY SNOW PLOW MOUNTS ON TRACTOR

THE SERIES "A" Sno-Flyr Rotary Snow Plow, manufactured by the Wm. Bros Boiler & Manufacturing Co., Minneapolis, Minn., has been announced as the newest member of the firm's line of snow removal equipment. The Series "A" type mounts on the front-end hydraulic loader of the industrial wheel-type tractor and utilizes the same pins and connections used to attach the loader bucket. No extra braces or drilling are said to be required. Snow removal capacity is 3 to 4 tons per minute in average snow conditions. The manufacturer claims that any job too big for sidewalk units and too small for the big truck units is just right for this new rotary plow.

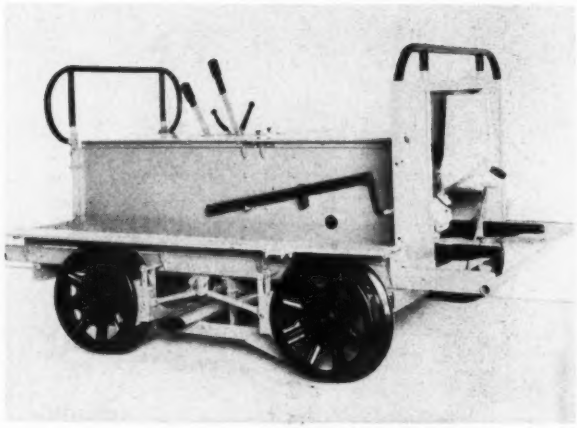


BUSINESS END of the new Bros Series "A" Sno-Flyr Rotary Snow Plow.

TRACTOR-MOUNTED, the new rotary plow can cast snow to either side at the rate of 3 to 4 tons per minute when working under average conditions.

A bucket tilting device provides positive operating control on plow and engine at different elevations so that the unit can be raised to the top of high drifts, to chew them down, layer by layer. A special loading chute allows truck loading on either side of plow and its rotating feature permits "spot" casting of snow in confined areas. The casting chute can be rotated through an arc of 180 deg. and a special capping device can be added to control the height of the ejected snow stream. This unit available in three models providing three plowing widths.

The Fairmont M19 Series AA inspection car.



The Fairmont S2 Series AA section car.

MOTOR CARS

FAIRMONT Railway Motors, Inc., Fairmont, Minn., has announced the availability of two new motor cars, one of which is a standard section car and the other a four-man inspection car. Both are powered by a new Fairmont two-cylinder, two-cycle, water-cooled engine.

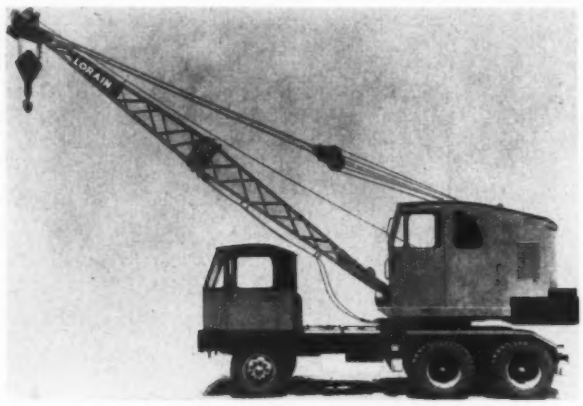
The new engine has aluminum cylinders, crankcase, cylinder heads, water hoppers, pistons, connecting rods, and side bearings. The cylinders are fitted with iron liners. Hy-load roller bearings support a heat-treated, forged-steel crankshaft. For better cooling, the steam condenser on the water hopper is unusually large in relation to the engine displacement. The ignition system includes an enclosed timer, five dry-cell batteries, and a vibrating coil.

The engine is reported to be smooth running and, in the case of the inspection car, supplies the additional power that is sometimes needed for the efficient handling of cars with cabs or windshields, and for climbing long, steep grades.

Both cars have a differential front axle, 16-in. by 14-in. demountable wheels, air cleaner, endless-cord belt drive, lift handles that extend either to the front or rear, four-wheel adjustable brakes, and ball-and-socket joints on the throttle and timer-control rods. Seats are easily raised for providing full access to engine and drive.

The inspection car, designated as M19 Series AA, has an aluminum-alloy frame, spring-mounted taper roller axle bearings, 1$^{3}/_{16}$-in. axles, aluminum-alloy tool-tray floors with nonskid covering, a load capacity of 750 lb., and seating space for four men.

The section car, designated S2 Series AA, has a structural steel frame, steel tool-tray floor, safety tread step plates, rigidized sheet-steel side panels 1$^{7}/_{16}$-in. axles, taper roller axle bearings, heavy-duty brakeshoe liners, a load capacity of 1,800 lb., and space for 8 men.



The Lorain Model MC-254W Moto-Crane.

The Lorain Model MC424 Moto-Crane.

TRUCK CRANES

THE THEW Shovel Co., Lorain, Ohio, has recently announced two new additions to its line of Lorain Moto-Cranes. They are model MC-254W in the "TL" Series, with a lifting capacity of 17½ tons, and model MC-424 whose lifting capacity is 22½ tons.

Model MC-254W is 3-axle Moto-Crane available as a ¾-yd. shovel, crane, dragline, clamshell, hoe or 1¼-cu. yd. scoop shovel. Overall width is 106 in., while maximum boom length with tip extension is 95 ft. It is equipped with 8 forward speeds, 2 reverse speeds, air brakes, and can travel up to 37 mph. The new Lorain may be had with diesel or gasoline power for turntable and carrier, with front driving axle, third drum and other accessories.

The 22½-ton model MC-424 is a two-engine machine with a gasoline-powered turntable or superstructure mounted on a 3-axle carrier, with drive on the two rear axles, powered by a separate gasoline engine at 10 forward speeds (up to 27 mph.) and 2 reverse speeds. The carrier has an over-all width of 96 in. and is 125 ft. long.

WHAT'S THE ANSWER? . . .

. . . a forum on track, bridge, building and water service problems

Heaving Along Shoulders

What problems in maintaining a track may be encountered when ridges of heaved material along the shoulders are removed? How can these problems be overcome? What measures can be taken to prevent further heaving of this nature?

Result from Poor Drainage

By C. C. Brown
Roadmaster, Chicago & North Western, Sioux City, Iowa

Ridges of heaved material along the shoulder are usually a sign of the presence of water in the subgrade, and are a result of improper drainage, regardless of whether the water is seepage from springs, which are often found in cuts, or surface water that has filtered through the ballast section and become trapped in pockets in the fill. This condition is more often found in fills constructed of impervious materials, such as gumbo.

These ridges should be ploughed off to a depth to allow proper drainage for the ballast section, and the subgrade allowed to dry out. In some cases this treatment should be supplemented by the use of tile drains, French drains, pressure grouting, or some other means of allowing the water to escape, and otherwise effecting better stabilization of the roadbed.

No unusual problem will be encountered by removing these heaved-up ridges. At locations where they appear, repeated spot surfacing is necessary to keep the track in proper line and surface. This condition will gradually improve as the roadbed dries out and subsequently becomes more stable due to its reduced moisture content.

Various Steps Necessary

By George S. Crites
Division Engineer (Retired), Baltimore & Ohio, Baltimore, Md.

Removal of the material from heaved ridges along shoulders of the roadbed has the same effect upon the stability of the roadbed as the picking of a scab from a boil has on bodily comfort. It allows for more ready eruption.

Heaved shoulders, or "raiserbacks," are due to the materials in the subgrade being fluid enough to be extruded at the pressures which they may be subjected. Assuming pressures may remain the same or increase, the solution of the trouble lies in reducing the fluidity of the supporting media by drainage or by injecting into it proper stabilizing agents; replacing the fluid material with a more stable material; supporting the loads over a greater area of the subgrade; supporting the tracks on proper blankets or piles; and confining the quagmires within cofferdams or other special treatments as required by circumstances.

An extensive area where an important line traversed a long deep clay cut was corrected by establishing a new gravel subgrade about four feet higher than the old one and providing ample side and cross drainage. After this new subgrade had been stabilized by use, the ballast section was standardized. This work was done more than 40 years ago and, though the loading has grown much heavier and faster, there has been no recurrence of heaved shoulders.

Similar treatment was given an important main line located in a daylighted high side cut of clay. Ample side and cross drainage was provided for the cut side and a 2-ft. blanket of cinders was spread on the daylighted side. The drained and blanketed section was allowed to stabilize for about two years before a standard ballast section was established. For such work, it is important that the matted section be uniformly stable before the final ballast section is placed in order that the subballast does not get depressions or have holes punched into it.

Material at the ends of the ties

Answers to the following questions are solicited from readers. They should be addressed to the Whats' the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the February Issue

1. To what extent is it desirable to maintain a stock of new ties on each section for use in emergencies? What factors determine the number needed for this purpose? Explain.

2. What are the essential requirements of an adequate heating and ventilating system for diesel shops? What types of exhaust and ventilating equipment will best meet these requirements? Explain.

3. What are the advantages and disadvantages of providing spare rails at intervals along the track for emergency use? Where this practice is followed, how far apart should these rails be placed? Explain.

4. What are the advantages of plywood as a material for concrete forms? Disadvantages? What precautions must be observed in its use for this purpose to obtain the best results?

5. What safety precautions should be observed when carrying torpedos and fuses on motor cars? When storing them at tool houses? Explain.

6. How often should fire protection equipment and facilities be tested? How and by whom should such tests be conducted?

over a clay pocket in an important main-line tunnel started heaving and it was found expedient to dig out the ballast and clay for a depth of 4 ft. below the bottoms of ties and support the track on cribs to allow for matting the track area with full-sized bales of straw over which 1 ft. of fine sand was spread and the ballast section restored. Ample drainage from the straw pocket was provided. This work was done 50 years ago without trouble since.

A very important main-line with its grade at about high tide in an important marine terminal was found to be over a quagmire and "raiser-backs" showed up almost with every passing train. Drainage was out of the question and street grades prevented any raising of the tracks for blanketing over the quagmire. The lowest section of the roadbed, involving about 300 ft., was confined in a steel sheetpile cofferdam with a proper mat. The approaches to the cofferdam were drained and matted with about four feet of cinders. The cofferdam section is stable and the approaches are reasonably so after 25 years of heavy use.

Most often, however, heaved ridges along shoulders may not be extensive and their correction usually lies in getting an outlet for drainage low enough to tap the lowest water in the roadbed and replacing unstable materials with permeable ones. If thorough drainage is impossible, grouting of the roadbed may be necessary.

Computing Track Capacities

When designing new yard layouts what figure should be used as the average car length for computing the capacity of the tracks? How is this average car length determined?

Cites AREA Report

By F. A. Hess
Assistant Chief Engineer,
New York Central, Chicago

The length of car to be used depends on whether cars of all types, or particular types such as ore cars, gondolas or automobile cars, are classified. Forty-five feet, coupler to coupler, should work out satisfactorily for the average car length where cars of all types are classified. If a preponderance of one type of car is classified, a study should be made to determine the average length.

Committee 14, Yards and Terminals, of the American Railway Engineering Association made a report on this subject which appears in Volume 50 of the AREA Proceedings. This is perhaps the most recent data with respect to lengths of freight cars, and the report contains a summary by roads of all types of cars, with a weighted average for each road, and a summary by types of cars. The overall weighted average length of all types of cars, as shown in the tabulation, is 46 ft. 3/16 in. Of the eight types of cars listed, all but the automobile, flat and gondola cars have an average length less than 45 ft. The three exceptions vary from 46 ft. 1 9/16 in. to 47 ft. 7 11/32 in. It is noted that the minimum length of tank cars is 31 ft. 1 in. and that of hopper cars 31 ft. 5 in., while the average length of these two particular types of cars is 38 ft. 7 1/32 in. and 38 ft. 1 15/32 in., indicating that these types would require much shorter tracks in a yard layout.

The average car length has been determined through experience; however, the AREA Committee 14 report would tend to confirm the use of an average car length of 45 ft. An average of 46 ft. might be used but would make little difference in a yard having tracks of 100 cars in length.

Type of Car Will Determine

By F. E. Austerman
Assistant Chief Engineer,
Chicago Union Station, Chicago

Since the length of freight cars as well as passenger cars varies extensively, the type of car using the yard should determine the basic length of the average car.

Many railroads have been using an average length of 43 ft. to 45 ft. between couplers for the last 25 years. AREA Committee No. 14 made a report on the average length of cars in Volume 50, page 213. An average length of 45 ft. was recommended from a study of several railroads. If short ore cars or large auto cars are predominant, then a check of several trains on your railroad will establish a good average length. It is true that the older, shorter cars are gradually being replaced by longer cars, but the 40-ft. inside length is most frequently built. The 45-ft. average length will cover most situations where the 50-ft. auto car and the 65-ft. gondola are in low numbers.

Most yard tracks are used as arriving or departure tracks, so that the capacity of the track may be established for 100—45 ft. cars and a 200-ft. diesel as 4700 ft. between clearance points.

Railroad pasenger cars are more uniform in length than other equipment, so a length of 85 ft. between couplers should be used in most terminals with the possible exception of the electric lines. The computed capacity of tracks should include the usual motive power used.

Railroad storage mail is handled in box and refrigerator cars, as well as baggage or mail cars, the latter varying in length from 60 ft. to 86 ft. It has been preferable to use 60 ft. to 70 ft. for an average length. This length will depend on the specific station or railroad and should be studied carefully. Good average figures for the lengths of railroad cars between couplers are: Freight—45 ft.; mail storage—60 ft.; and passenger—85 ft.

Hasn't Changed Materially

By B. J. Worley
Principal Assistant Engineer, Chicago, Milwaukee, St. Paul & Pacific, Chicago

The average length of a freight car to use in designing yard layouts depends on the type of car to be handled. For example, if the commodity being handled is predominantly coal, the average length of hopper and gondola cars should be considered.

For a number of years, we have been using 46 ft. as the average length of car in designing new yards where all types of cars are handled. This length was determined by actually measuring a large number of cars in different yards and dividing by the total number of cars measured. A recent check has been made, and it was found that average car length is still 46 ft.

Some of the newer cars manu-

(Continued on page 1094)

"IF I CAN'T GET IT— I DON'T WANT ANY CHEMICAL"

"NEXT YEAR I WANT THE KIND OF WEED KILLER THAT WAS USED ON THE NORTHERN DIVISION OF OUR LINE. *IF I CAN'T GET IT, I DON'T WANT ANY CHEMICAL.*"

This crisp statement was made by a regional officer of a large railroad to the general manager. Such a statement could only have been ventured with proof of positive observations and superior results.

When a large railroad splits its weed killing business, definite comparisons are made and benefits are evaluated. Most railroads assemble figures which tell a convincing story. Studies of these benefits and costs per mile invariably show "HERBICIDOL" well out in front. Back of its formulation are years of practical experience and progressive research.

In 1953, our success with "HERBICIDOL" has been nothing less than phenomenal. Ever satisfied former users observed its increased killing properties and have commented on it.

Plans and budgets are now in the making for next year. *May we review your weed and brush control program for 1954.*

READE EST. 1883

THE READE MANUFACTURING CO., INC.

CHEMICAL WEED KILLERS

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Works:

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factured, particularly box cars, are longer than the older cars; however, our study of the average length of all types of cars indicates that this length has not materially changed in the past five years.

Compute Tracks Separately

By A. L. Sams
Office Engineer, Illinois Central, Chicago

Under normal circumstances, an average length of 45 ft. is recommended for determining the capacity of freight receiving, classification and departure tracks. This figure is confirmed by a report on this subject published in 1949 by AREA Committee 14 (AREA Proceedings, Vol. 50, page 213).

Each track should be computed separately, and suitable deductions must be made from the clearance length for any road crossings. An allowance for the locomotive should be made in computing the capacity of yard tracks. When it is known in advance that the preponderance of use will be by cars whose average length is greater than 45 ft., a greater average length should be used accordingly. Also, where fixed installations, such as freighthouse doors, loading or unloading devices, etc., are involved, the length of the longest car should be used. An average length of less than 45 ft. is not recommended.

The capacities of tracks in a passenger terminal should be computed on the basis of 85-ft. coaches and 70-ft. mail, baggage and express cars. An allowance of 100 ft. for a steam locomotive or 75 ft. for each diesel locomotive unit should be made in determining the capacities of passenger station tracks.

Preventing Clogged Weep Holes

What measures can be taken to prevent the clogging of weep holes in concrete slab bridges? How can these holes best be opened after they have become clogged?

Offers Weep-Hole Design

By Warren G. Burres
Railway Representative,
Structural Bureau,
Portland Cement Association

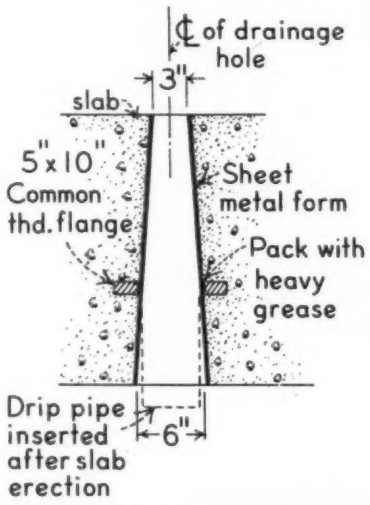
The importance of satisfactory drainage of concrete slab bridges should not be underestimated. Any condition obstructing drainage will cause trouble, requiring maintenance that would otherwise be unnecessary.

Water collected in the ballast troughs of the slab bridges is usually discharged through weep holes. If these outlets are omitted or become clogged then water must escape at points where its passage damages the bridge—principally through the joints between slabs. This water saturates the concrete at the joints and at the tops of piers and abutments. In northern climates this means that the concrete will be exposed to unnecessarily severe conditions of freezing and thawing. Damage from this condition need not occur if proper consideration is given to drainage in the design and construction of the deck slabs and the concrete is not allowed to become saturated.

The first step in assuring adequate drainage is to provide sufficient drains. Secondly, the top surface of the slab must be sloped so that water is carried to these outlets. Third, the holes must be designed so that they actually carry off water.

Should the holes of an adequately designed system become clogged with ballast or with fine material that fouls the ballast, they can perform only partially at best. However, protection can be obtained by designing a drain that will not clog.

To keep ballast out of drains, most railroads cover the hole, using either bent boiler plates, cast-iron grates or one of several types of strainers. One strainer is made up of flat bars while another in the shape of a beehive is of heavy wire mesh. A disadvantage of grates and strainers is that, while big pieces of ballast are kept out, smaller pieces, together with soil, will, after a time, clog the grate or strainer openings. If ballast surrounding the strainers can be kept clean the drains will function. However, since it is difficult to keep ballast clean, other ideas must be developed.

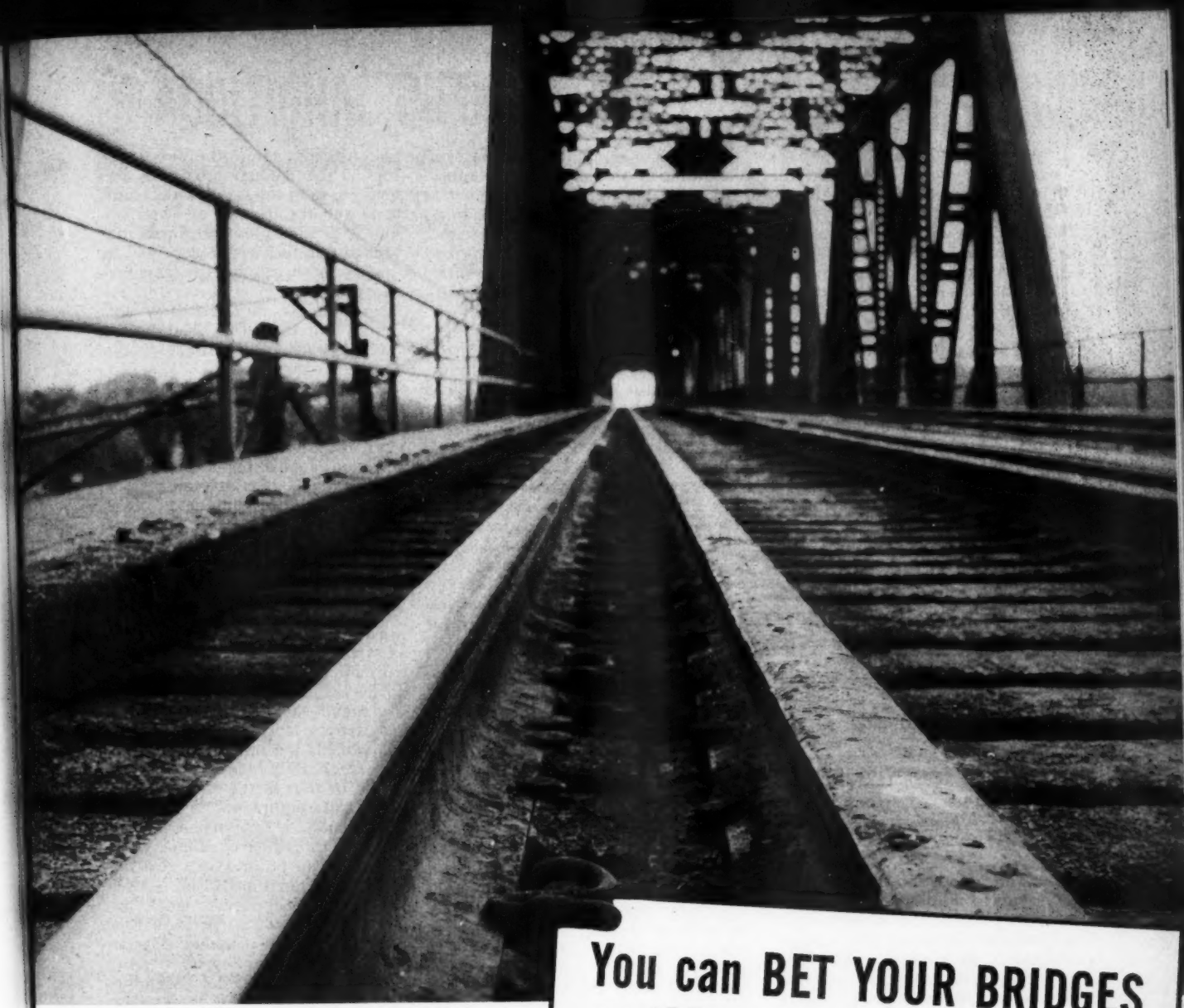


DRAINAGE OPENING referred to in the accompanying text employs sheet metal form. Drip pipe is inserted in hole after the slab has been erected.

Without doubt, correct hole design can eliminate much clogging. Several factors influence the design. Outlets should be of sufficient size to discharge drainage water and to be formed and cast easily. I feel that a diameter of 3 in. is the minimum size desirable. If holes are properly shaped, rock ballast can clog them only under exceptional circumstances. A drip must be provided to prevent constant saturation of the under-surface of the slab by slow-flowing water.

The accompanying sketch indicates the type of drainage opening that I have in mind. The hole is formed in the slab using a sheet metal form in the shape of a truncated cone, 3 in. in diameter at the top and 6 in. at the bottom. The cross-section of increasing diameter assures that anything entering the top of the outlet will fall through. Over the top of the cone is placed a common threaded iron flange, 5 in. by 10 in. Prior to installation, the flange threads should be heavily greased to prevent bonding with concrete along the sides of the form. The height of the cone-shaped form is equal to the slab depth eliminating unnecessary holes in the bottom forming material. After the concrete has hardened the metal form is removed leaving the threaded flange embedded in the slab. Another approach might indicate that the forming cone could be cut, the

(Continued on page 1096)



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flange inserted and the parts joined. This would mean that the inexpensive metal form could remain in place. However, fewer difficulties, present and future, will be encountered if the form is removed after the concrete is cast.

When the slab is in position, a piece of pipe, serving as a drip, can be screwed into the threaded flange. This pipe should extend at least two inches below the bottom of the slab.

To service and maintain drainage holes which are covered with ballast is a problem. I do not believe that the drain I have described will clog, but should it, due to some unforeseen circumstance, then it must be cleared, probably by rodding. Rodding can be difficult unless such a contingency is anticipated and methods of handling planned. Rodding from below the structure presents several difficulties. If the bridge or trestle crosses a stream, the work must be done from a boat. If the bottom of the slab is many feet above the water or ground line scaffolding may be needed. Also, any material falling from the drain falls directly on the person doing the rodding.

If the work is normally done from above, the ballast must be removed, requiring considerable work. One midwestern railroad has devised a scheme in which a pipe is placed over the drainage hole extending from the slab to the top of the ballast. Provisions are made to hold the pipe in place and to permit the passage of water below it to the hole. The top of the pipe is covered with a cap held in position with spring clips. This system has been most successful, for inspections can be made easily and should a drain require cleaning the pipe provides ready access to the clogged region.

Proper drainage of concrete slab bridges pays dividends in the form of a longer maintenance-free life. Correct design procedures and construction details for drain outlets will do much to assure satisfactory drainage and to eliminate future trouble spots.

Tools for Water Service Repairmen

What types of portable power tools and equipment are considered essential for use by water-service repairmen? What other types are also desirable? Explain.

Must Keep Pace With Times

By I. E. Weidman

Water Service Foreman,
Missouri Pacific, Coffeyville, Kan.

I am of the opinion that, because of varying conditions prevailing in different parts of the country, it is not possible to cover this subject adequately in a single discussion. As a general statement, however, it may be said that changes in water-service tools and equipment must keep pace with the modernization of the railroads.

The first requisite, in my opinion, is a truck for transporting portable power tools and equipment and men to and from the job with a minimum of delay. Other requirements include portable electric drills, ¼ in. and ⅝ in. in size; a drill stand for the ⅝-in. drill so it can be used in the shop to substitute for a drill press; and a small portable arc-welder, say not over 200 amp., gasoline-engine driven, so it can be easily transported and handled to any job. The welder is useful because we are now handling so much diesel oil, a fact which makes it desirable to weld as many joints as possible. Another useful tool is a small air compressor, say of 40 cfm, mounted on rubber so it can be easily trailed to any location. Tools for use with the compressor should include a demolition tool, with drill bits, dirt spades, etc., for use in getting through concrete floors and foundations and through hard dirt under tracks.

Some desirable power tools, which I feel would move the work much faster as well as producing a great saving in man-hours, include a portable pipe threader cutting up to a 2½-in. thread, a power hack saw, both with 110-volt electric motors, and a small tractor equipped with ditch digger and front-end blade. Digging ditches and backfilling by pick and shovel is too slow and costly these days.

I think it is an accepted fact that in too many cases the class and amount of work we turn out depend on the tools we have to do the job with. Often the shortage of the proper tools and equipment prevents us from producing first-class work.

Lists Various Tools

By Assistant Engineer

The use of a small truck by water service repairmen has proved highly profitable because he and a helper can handle more territory and can carry along all of the hand tools, equipment and material that may be needed for the work at hand. The truck also should carry a small portable, gasoline-driven trench pump to take care of emergencies.

The drilling of metal is an operation that takes too long for a repairman at his present wages to do by hand. Since electric current is generally available at all pumping stations and terminals where this work is performed, an electric drill for boring holes up to ⅝ in. should be part of the water service repairman's equipment.

There was a time when power-operated threading machines were considered to be uneconomical for use by field repairmen. But, having that electric drill on your truck has opened up a way to perform this onerous work by machine. A pipe threader that operates off a ½-in. electric drill is available. Weighing only about 25 lb. and costing today about $130, this machine will cut and thread pipe of 1-in., 1¼-in., 1½-in. and 2-in. diameters, which are normal railroad pipe sizes. This tool should now be part of every repairman's equipment.

Welding equipment, if used properly, can be a boon to water-service repairmen when repairing defective pipes, tanks, machinery and even pumps. If this equipment is of the arc-welding type, it can be easily transported between jobs on the truck. But if of the oxy-acetylene type, this equipment is also welcome, as the gages, welding and cutting torches, hose from tank to torches, and a dolly for handling the tanks, take up little room.

Additional equipment should be kept available at the division headquarters where it can be used by both the water service repairmen and the B&B forces. This should include a small wheel-mounted air

(*Continued on page* 1100)

ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

The following compilation lists all products mentioned in the advertising and editorial pages of this issue. If you desire additional information on any product shown, use one of the addressed postage paid cards to request it. *Write in* the product and page number in each case. The information will come to you, without obligation, directly from the manufacturer.

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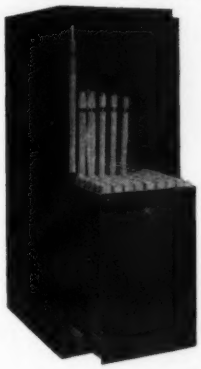

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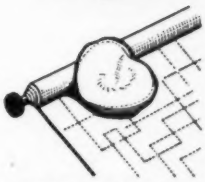

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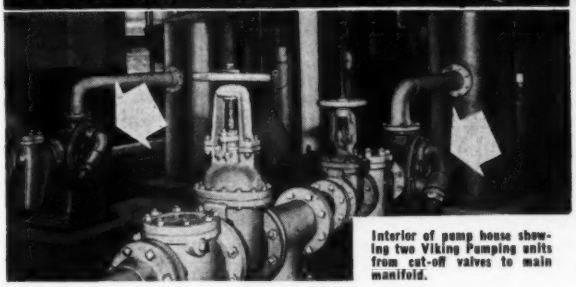

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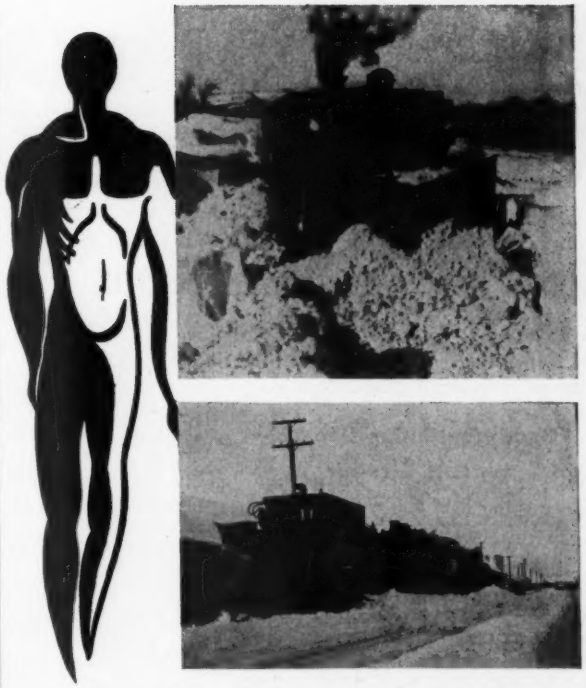

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Roof Fires in Diesel Shops

What materials and types of construction give the best results in avoiding fires and fire damage in the vicinity of roof ventilators in diesel shops? Explain.

Good Ventilation Needed

By L. H. LAFFOLEY

Engineer of Buildings,
Canadian Pacific, Montreal, Que.

It has been our practice wherever new construction is involved for diesel shops to use non-inflammable materials for the roof structure and roof deck, such as steel frame with steel roof deck or concrete frame with precast concrete roof slabs.

Where old frame buildings, such as enginehouses, shops, etc., have been converted for diesel servicing, no particular precautions have been taken in the installation of roof ventilators. The timber roof decks have been left and new timber framing provided for the installation of the ventilators. It is felt that, if the ventilation is adequate, the fine soot, which would be the most probable cause of the fires mentioned in the question, would be carried away with other fumes and not deposited on the structural members.

To date our assumptions in regard to proper roof ventilation have been borne out in that, to my knowledge, no fires have occurred in our diesel servicing structures.

Suggests Continuous Hoods

By ASSISTANT ENGINEER

The first requirement in preventing fires in the vicinity of roof ventilators in diesel shops is to use fire-resistive construction throughout. This means, of course, the use of steel-framing and a roof covering of metal or lightweight concrete slabs, or the equivalent, or of corrugated asbestos-cement sheets.

However, such construction is not a complete solution to the problem. It has been found that oil and soot from diesel exhaust gases quickly form a coating over the framing and the underside of the roof. Such coatings are heaviest in the vicinity of roof ventilators. Obviously, such coatings present a fire hazard and fires have actually occurred as a result of their presence. This is a problem that is receiving a great deal of attention at the present time but, so far as I know, no form of construction has been devised which gets at the root of the problem, namely, the coating of the members with soot and oil.

It seems to me that the solution of the problem lies rather in the design and use of ventilating systems that will gather and carry off the exhaust gases practically at their source. Perhaps the best solution is the ventilating system that incorporates the use of a continuous hood-like structure over each pit track, in combination with a positive ventilating system which will insure that all exhaust gases will be drawn into the hood.

One of the more recently constructed diesel shops has a ventilating system incorporating these principles. In this system the hood over each track has a series of longitudinal slots which, in combination with a blower system, assures that the exhaust gases will be drawn off at a high velocity. While the primary purpose is to achieve efficient elimination of exhaust gases from the building, a secondary thought was to minimize the formation of combustible coatings over the roof members.

Guards With Self-Guarded Frogs

Under what conditions, if any, is it desirable to use a standard guardrail with a self-guarded frog? Why?

Used for Extra Protection

By F. W. CREEDLE

Assistant Engineer-Maintenance,
Chicago & North Western, Chicago

At certain locations, such as slow-speed heavy-traffic turnouts in passenger and freight terminals, a self-guarded frog is used with two guardrails. This is done to give extra protection and reduce maintenance.

At other locations, such as heavy switching leads, it is desirable and economical to use a guardrail on the turnout run with a self-guarded frog. At such locations, practically all of the wear on the guard is on the turnout run, and if a guard rail is not provided the frog will have to be repaired or replaced in a relatively short time to avoid derailments. The cost of the guard rail must be weighed against the cost of welding the guard on the frog, the cost of replacing the frog under traffic and the original or replacement cost of the frog. There are relatively few locations where the use of a guardrail with a self-guarded frog can be justified and one should not be used unless the economy can be proved or there is a safety factor involved.

Practice Not Recommended

By H. W. KELLOGG

Engineer of Track,
Chesapeake & Ohio, Detroit, Mich.

The reason for using self-guarded frogs in terminal tracks and yard tracks is to eliminate the necessity for the use of guardrails in these locations. From an economical point of view the total purchase

(Continued on page 1102)

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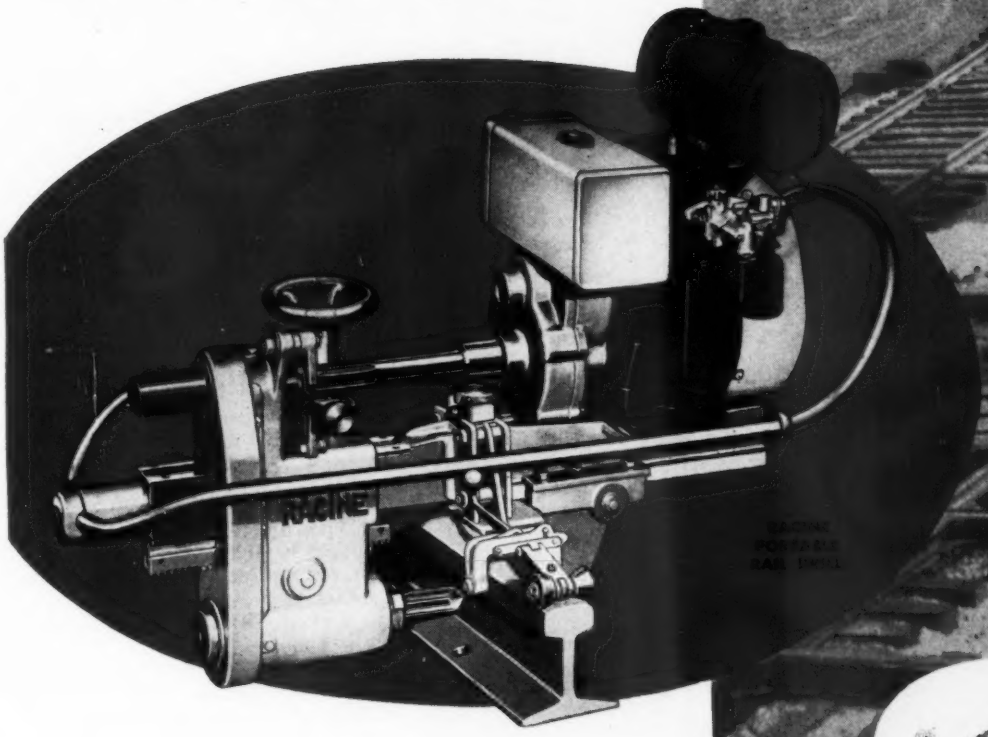

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What's the Answer? (Cont'd)

price of two complete guardrails and one solid manganese frog, or a manganese-insert railbound frog, is greater than that of one self-guarded manganese frog. Also, when installing a turnout there are further definite labor savings resulting from the installation of a self-guarded frog compared to a standard frog with guardrails.

In northern climates where there is heavy snowfall it is necessary to clean the snow from around the guardrails which are held in place by clamps. This is necessary to prevent them from being forced upward by the pressure of ice and snow and to prevent one-piece manganese guardrails from becoming packed with ice and snow, which could contribute to the cause of a derailment. In a large yard the labor for keeping guardrails free from ice and snow amounts to many man-hours that could be spent more profitably elsewhere. The use of the self-guarded frog eliminates this expense.

If there are any conditions, such as the presence of sharp curvature, where it is thought that guardrails should be used with a self-guarded frog, then the thing to do is not to use the self-guarded frog because the fundamental principle of that type of frog has then been defeated, as it is not sound economy to install an expensive self-guarded frog and then apply guardrails. Therefore, I would not recommend the use of a self-guarded frog at a location where the application of guardrails would be required.

Should Not Be Necessary

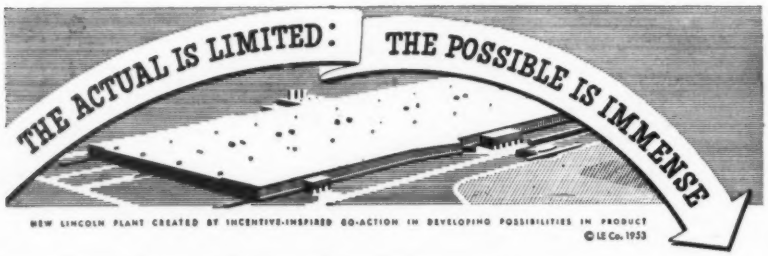
By Assistant Engineer

The use of a standard guardrail with a self-guarded frog should not be necessary because the high guard on each side of the frog point (if properly maintained) keeps the flange of the wheel in proper alinement while passing through the flangeway of a frog.

Recent changes in the AREA design of manganese frogs have increased the guard and wall thicknesses to take care of heavy rail sections and prevent the guard or wall from bending out.

The use of self-guarded frogs should be restricted to tracks with maximum speeds of 40 mph and under to prevent the possibility of a broken wheel flange in this type of frog.

There would be one exception in using a guardrail with a self-guarded frog and this would be to reduce excessive wear on the guard on the turnout side especially on a heavy switching lead. Some roads have done this.



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...simplifies repairs, construction, hardsurfacing

ON-THE-JOB repairs are now done in less time, with less cost. "Lincwelder's" broad current range... (30 to 250 amps)... its world famous Lincoln Dual Continuous Control for selecting *exact* welding current produces top quality welds on all metals. Mounted either on a 2 wheel undercarriage or carried on a light truck, "Lincwelder" can be hurried to any job in less time to cut costly railway maintenance manhours.

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Railway Track & Structures
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THE MONTH'S NEWS

Railway Personnel

General

Winfred L. Thorton, supervisor of track on the Southern at Greenwood, S. C., has been appointed assistant trainmaster at Columbia, S. C.

J. T. Cooper, supervisor of track on the Northern division of the Pennsylvania at Dunkirk, N. Y., has been appointed assistant trainmaster-division operator on that division.

Engineering

William R. Luhn, assistant engineer on the Missouri Pacific at St. Louis, Mo., has retired after 44 years of continuous service.

J. Nelson Shaw, engineering assistant on the Lehigh & Hudson River at Warwick, N. Y., has retired after 45 years of service.

Rex Hoop, senior assistant engineer on the Western Maryland, has retired after 43 years of service.

T. D. Kern, supervisor of track on the Illinois Central at Monroe, La., has been promoted to assistant to the division engineer at Vicksburg, Miss., succeeding **A. J. Boa,** deceased.

W. B. Vander Klipp, rodman on the Chesapeake & Ohio at Grand Rapids, Mich., has been promoted to assistant engineer at Saginaw, Mich., and **P. W. Geer, Jr.,** draftsman at Detroit, Mich., has been appointed construction engineer at Saginaw.

R. J. D. Kelly, assistant construction engineer on the Delaware & Hudson, has been promoted to construction engineer with headquarters as before at Albany, N. Y., to succeed **A. R. Morse,** who has retired. The position of assistant construction engineer has been abolished.

Thomas K. Dyer, whose appointment as assistant division engineer on the Boston & Maine at Boston, Mass., was recently announced (RT&S, August, p. 756), was born at Medford, Mass., on January 28, 1922, and received his B.S. degree in civil engineering from Massachusetts Institute of Technology in 1943. He entered the service of the B&M as a structural draftsman at Boston in 1946. With headquarters continuing at Boston, Mr. Dyer was appointed structural designer in 1947, project engineer in 1949, and assistant structural engineer in 1951, serving in the latter capacity until his recent promotion to assistant division engineer.

J. H. Reeder, district engineer of the Quebec district of the Canadian Pacific at Montreal, Que., has retired after 41 years of service. **R. E. Farmer,** assistant district engineer at Montreal, has been promoted to succeed Mr. Reeder, and **A. G.**

(*Continued on next page*)

BRIDGE ENGINEERS of road after road are studying HEXTEEL's 15-, 20-, 25-years' endurance records in industry and on public highway bridges, making test installations in the well founded hope that HEXTEEL will

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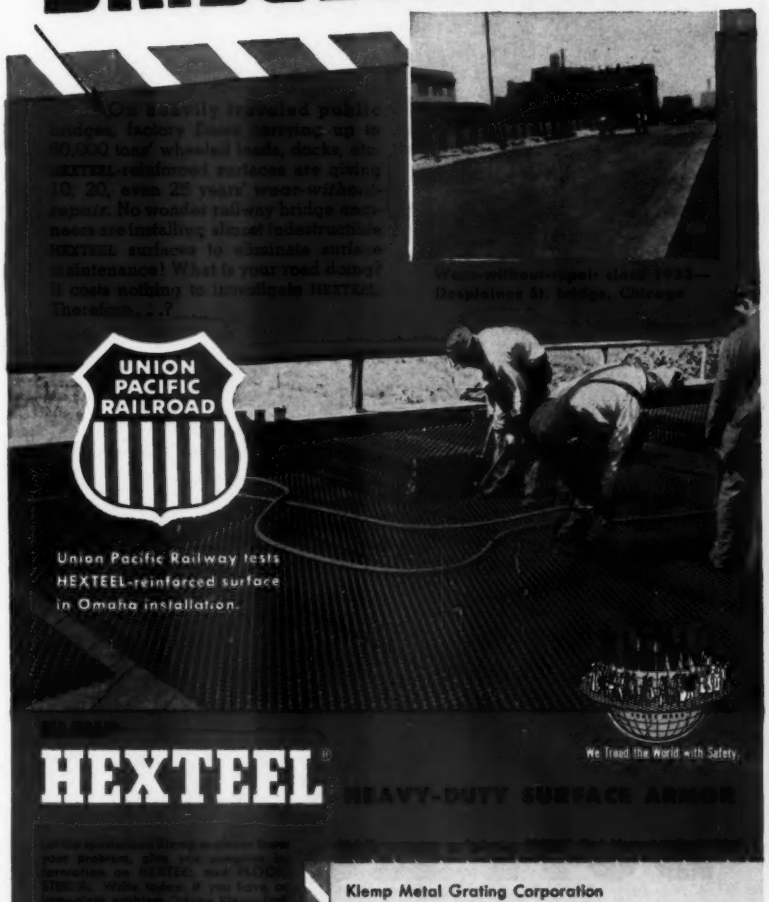

Union Pacific Railway tests HEXTEEL-reinforced surface in Omaha installation.

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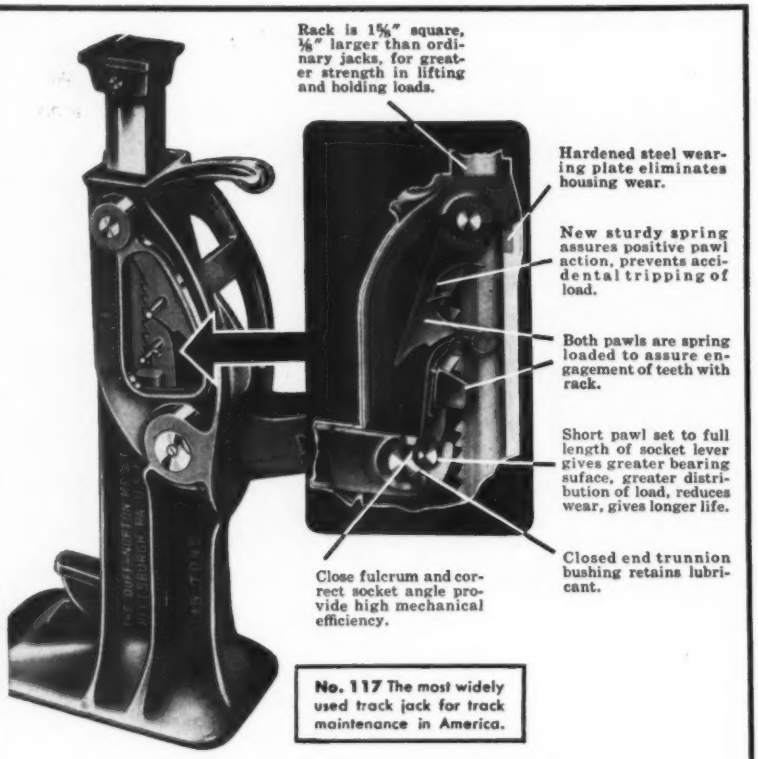
Rack is 1⅝" square, ⅛" larger than ordinary jacks, for greater strength in lifting and holding loads.
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Both pawls are spring loaded to assure engagement of teeth with rack.
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Close fulcrum and correct socket angle provide high mechanical efficiency.

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It's taken exactly 70 years to build this jack . . .

. . . and we haven't finished yet and probably never will because we are never satisfied.

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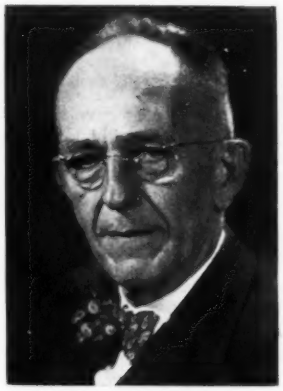
Railway Personnel (Cont'd)

Hibbard, division engineer for the Montreal Terminals division, has taken over Mr. Farmer's former position. Mr. Hibbard in turn has been succeeded by **R. S. Allison,** division engineer at London, Ont.

Mr. Reeder entered the service of the CPR in 1912 as a transitman at Sudbury, Ont., and was promoted to resident engineer at Schreiber, Ont., in 1913, later serving in that capacity at Montreal. In 1924 he was advanced to assistant district engineer of the Quebec district and in 1929 he became general tie agent, transferring in that capacity to the purchasing department in Montreal in 1937. He returned to the engineering department in 1943 as assistant district engineer, and in 1949 was named district engineer.



J. H. Reeder

James W. Wiggins, engineer maintenance of way of the Maine Central, has been promoted to chief engineer with headquarters as before at Portland, Me. **Charles D. Prentice,** division engineer on the New York, New Haven & Hartford at New Haven, Conn., has been appointed engineer of track on the MC at Portland. **James O. Born,** supervisor of structures on the Denver & Rio Grande Western at Grand Junction, Colo., has

James W. Wiggins

(*Continued on next page*)

been named engineer of structures on the MC at Portland, and **Harry Homans,** assistant division engineer, has been promoted to division engineer in charge of all track from Waterville, Me., east, with headquarters as before at Bangor, Me.

Mr. Wiggins was born at Houlton, Me., and was graduated in 1930 from the University of Maine. He entered railway service that same year as a draftsman on the Erie and, in 1933, went with the Bangor & Aroostook as a rodman. In 1936 he went with the Maine Central as assistant engineer, returning to the B&A as superintendent of bridges and buildings in 1938, and was promoted to principal assistant engineer of that road in 1940. He resigned in 1945 to go with the Boston & Maine as assistant to the chief engineer, and in 1949 left the B&M to become engineer maintenance of way of the MC, the position he held at the time of his recent promotion.

Irwin H. Schram, chief engineer of the Erie, with headquarters at Cleveland, Ohio, retired November 1 after 45 years of service.

Mr. Schram was born at Milwaukee, Wis., October 14, 1888, and received his higher education from the Armour Institute of Technology. He entered railroad service with the Erie in 1908 as a rodman and subsequently served as transitman and assistant engineer until 1916 when he was promoted to division engineer. He was named trainmaster in 1918, terminal superintendent in 1920, and regional engineer in 1921, serving in the latter capacity at Hornell, N. Y., and Chicago. In 1927 Mr. Schram was promoted to engineer maintenance of way at Hornell and in 1932 was transferred in that capacity to Jersey City, N. J. He

Irwin H. Schram

was appointed acting chief engineer maintenance of way at Cleveland in 1943 and the following year was named chief engineer maintenance of way. Mr. Schram was promoted to chief engineer, system, in July 1946. He served as a director of the American Railway Engineering Association from 1949 until 1951.

Track

W. A. Kearns has been named assistant supervisor of track on the Chicago division of the Pennsylvania at Chicago, succeeding **W. A. Kusnerek.**

Paul H. Croft, Jr., has been named supervisor of track on the Illinois Central at Tutwiler, Miss., succeeding **D. H. Yazell,** who has been transferred to Monroe, La. Mr. Yazell succeeds **T. D. Kern,** whose promotion to assistant to division engineer is noted elsewhere in these columns.

J. H. Trottier, assistant roadmaster on the Laurentian division of the Canadian Pacific at Montreal, has been promoted to roadmaster on the Maniwaki, Waltham and Ottawa Terminals subdivisions, with headquarters at Ottawa, Ont., to succeed **L. Lavergne,** who has been transferred.

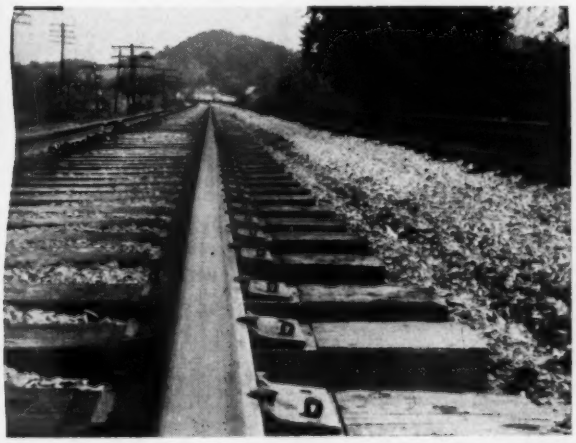
L. H. Rose, supervisor of track on Subdivision D of the Delaware & Hudson at Oneonta, N. Y., has been transferred to Subdivision K at Plattsburg, N. Y., to succeed **E. J. Ryan,** whose death is noted elsewhere in these columns. **J. J. Connor,** transitman at Albany, N. Y., has been promoted to supervisor of track at Onenota to replace Mr. Rose.

Hubert L. Rose, assistant supervisor of track on the Southern at Columbia, S. C., has been promoted to supervisor of track

(*Continued on next page*)

USE TIE PLATE LOCK SPIKES

for Minimum Annual Cost of Ties in Track



• hold gage • prolong life of ties

• save maintenance expense

LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven, or removed, with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Tie plates are held against horizontal and vertical movement under spring pressure. Play between the spike and the hole is eliminated—gage is held and plate cutting is overcome.

LOCK SPIKES not only become integral with the tie plate, but also the lateral pressure by the legs against the sides of the tie hole, binds the spike in the tie. This unique feature gives tight adhesion between tie and plate.

LOCK SPIKES were first installed in 1947. Since they have been in track, no maintenance whatever has been required. Cost of installing in track is low and comparable to cut spikes. The advantages and saving only found in Lock Spikes reduces the annual cost of ties in track and maintenance expense to a minimum. We invite your investigation.

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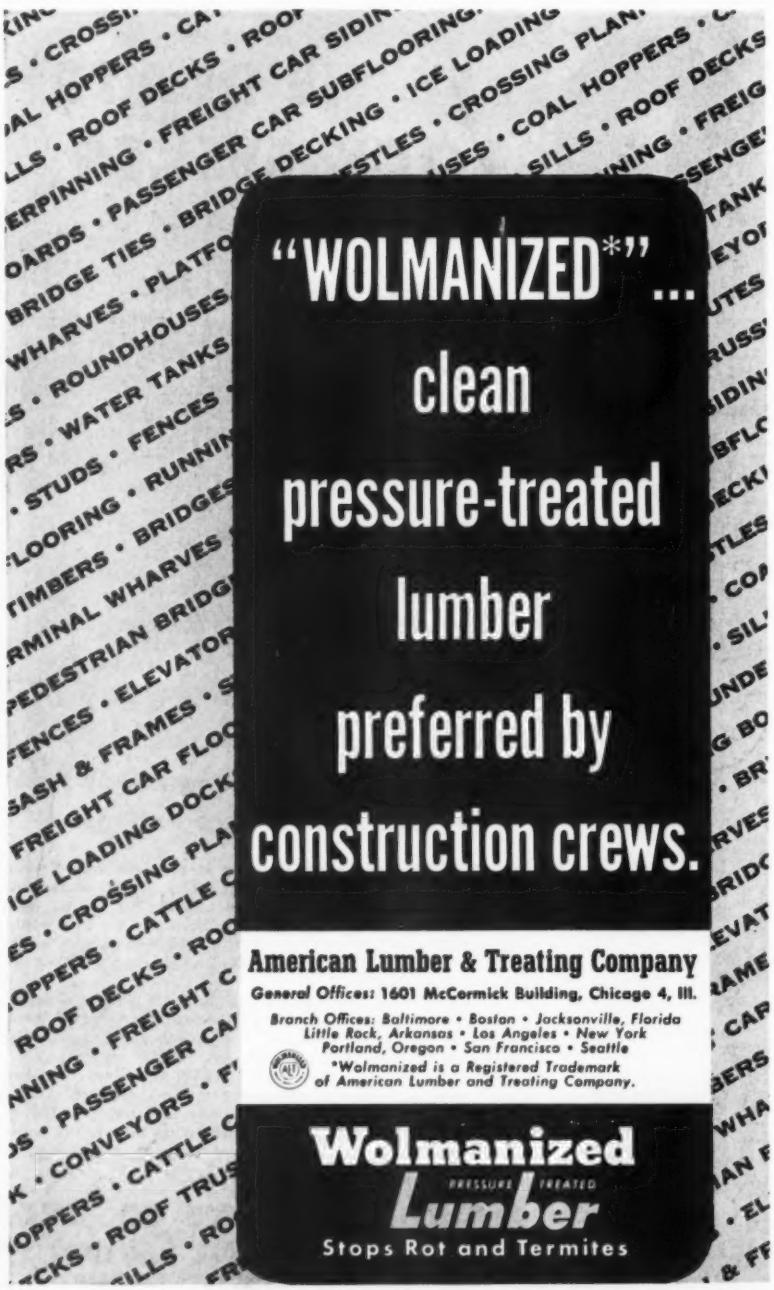
Railway Personnel (Cont'd)

at Greenwood, S. C., to succeed **Winfred L. Thornton,** who, as announced elsewhere in these columns, has been appointed assistant trainmaster at Columbia. **Myles O. Grant,** supervisor of track at McDonough, Ga., has been transferred to Griffin, Ga., to replace **Dennis L. Belk,** who in turn has replaced Mr. Grant at McDonough. **Robert W. Fondren,** assistant supervisor of track at Charlotte, N. C., has been promoted to supervisor of track at Keysville, Va. **Alvin E. Chambers** has been appointed assistant supervisor of track at Richmond, Va.

Harvey H. Turner, acting roadmaster on the Atlantic Coast Line at Leesburg, Fla., has been appointed roadmaster at that point

Mr. Turner, who is 37 years of age, entered the service of the ACL as a section laborer at Kissimmee, Fla., in 1939. He had been section foreman more than two years when he went into Army Transport Service in October 1944. Upon his release from military service in 1946, he returned to the railroad as section foreman at DeLand, Fla. Advanced to assistant roadmaster at Lakeland, Fla., on September 7, 1952, Mr. Turner served in that capacity until the following November, when he was appointed acting roadmaster at Leesburg.

W. N. Taggart, supervisor of track, assigned to the office of the general manager, on the Pennsylvania, has been appointed supervisor of maintenance of way equipment on the Maryland division. **A. J. Syvertsen,** supervisor of track on the Southwestern division at Columbus, Ind., has been transferred to the Northern division at Dunkirk, N. Y., to succeed **J. T. Cooper,** who, as announced elsewhere in these columns, has been appointed assistant trainmaster—division operator on the Northern division. **K. E. Smith,** assistant supervisor of track on the Panhandle division at Steubenville, Ohio, has been promoted to supervisor of track at Columbus to succeed Mr. Syvertsen, and **C. G. Yund,** assistant supervisor of track on the Chicago division at South Chicago, has been transferred to Steubenville to replace Mr. Smith.



Bridge and Building

S. J. Barranco, assistant supervisor of structures on the Panhandle division of the Pennsylvania with headquarters at Pittsburgh, Pa., has been promoted to supervisor of structures on the Cincinnati division, at Cincinnati, Ohio, succeeding **F. L. Lee.**

L. H. Higgins has been appointed general foreman of bridges, buildings and water service on the Pecos division of the Santa Fe with headquarters at Clovis, N. M., succeeding **A. W. Gobeli,** deceased.

Simon Fogarty, Jr., assistant engineer on the Central of Georgia at Savannah, Ga., has been appointed supervisor of bridges and buildings at Macon, Ga.

Mr. Fogarty was born in Charleston, S. C., and received his B.S. degree in civil engineering from Clemson College in June 1947. Following service with the Highway Department of Southern Carolina, he joined the C of Ga. as an assistant engineer in the engineering department at Savannah on April 19, 1948.

Obituary

E. J. Ryan, supervisor of track on Subdivision K of the Delaware & Hudson at Plattsburg, N. Y., died on July 31.

Association News

American Railway Engineering Association

Several committees are planning meetings to be held during November, primarily to give final approval to reports to be presented to the 1954 annual meeting, but as of the time that this issue went to press definite dates for these meetings had been set only by two committees. The Committee on Ties has scheduled a two-day meeting on November 2 and 3 to inspect ties at the Koppers Company, Orrville, Ohio, and at the Baker Wood Preserving Company,

Railway Personnel (Cont'd)

Marion, Ohio. At both plants the committee will observe the latest developments in the mechanical handling, stacking and doweling of cross ties. The Committee on Economics of Railway Labor will meet in St. Louis on November 9. That evening some of the members of this committee are expected to attend the November meeting of the Mississippi Valley Maintenance of Way Club.

By letter ballot of the Board of Direction, H. B. Christianson, special engineer, of the Chicago, Milwaukee, St. Paul & Pacific, at Chicago, and chairman of the Special Committee on Continuous Welded Rail, has been elected a director of the association to fill the vacancy on the board created by the death of F. G. Campbell (RT&S, October, pg. 1012).

Maintenance of Way Club of Chicago

The November meeting of the Club will be held on the 19th at Welty's Restaurant in the Field building, Chicago. The principal speaker at this meeting will be A. H. Whisler, assistant engineer, Pennsylvania, whose subject will be "Out-of-Face Rail Grinding on the PRR." Mr.

(*Continued on next page*)

Meetings and Conventions

American Railway Bridge and Building Association—Annual meting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Annual Meeting, March 16-18, 1954, Palmer House, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting November 19. E. C. Patterson, secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

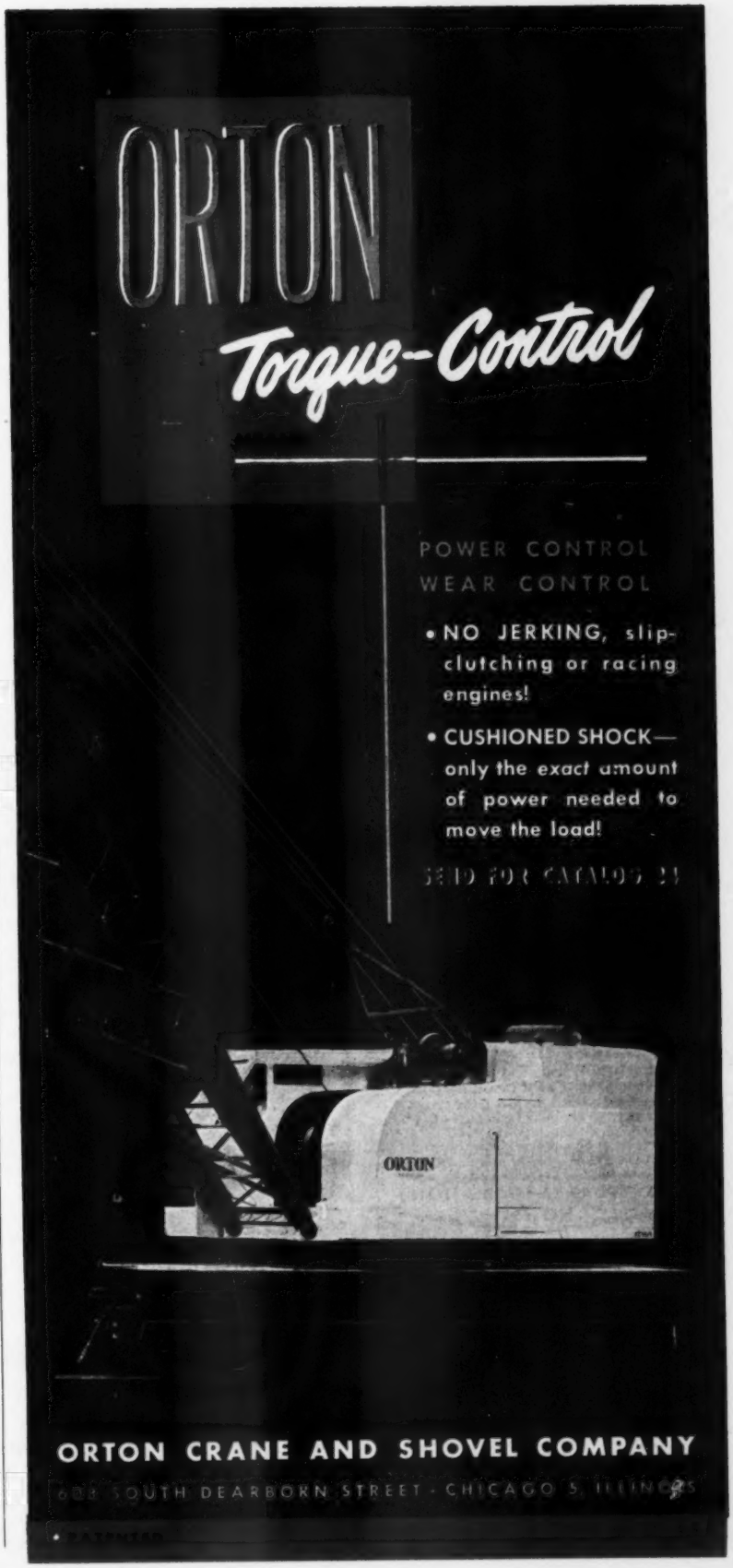
Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Roy M. Edmonds, Secretary-treasurer, 1221 Locust street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.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Association News (Cont'd)

Whisler will describe the nature and operation of the specially designed rail grinding cars that have been in use on this road for a number of years for surface grinding both new and old rail.

The last meeting was held on October 26. At this meeting a moving picture was exhibited showing the methods employed in France in welding, handling and laying continuous welded rails. The film had a sound track in English. Additional comments were offered by Henri Girod-Eymery, president, Societe d'Etudes, Ferroviaries, Paris, France.

Bridge & Building Association

The next meeting of the Executive committee will be held at the Rice Hotel, Houston, Tex., on December 7. This meeting will be directed by President Lee Mayfield, resident engineer, Missouri Pacific Lines, Houston. In addition to routine business the Executive committee at this meeting will select the personnel of committees to prepare reports on eight selected subjects for presentation at the convention in 1954.

Metropolitan Maintenance of Way Club

The opening event of the fall season of the club was a dinner meeting at the Hotel Shelburne, New York, on October 29. The main feature of the evening was a short talk describing "Railroad Transportation at Fairless Works," by J. L. Sorensen, superintendent of transportation of the Fairless Works of the United States Steel Corporation near Morrisville. Pa., which was followed by a showing of the motion picture "New Neighbor," portraying scenes at the Fairless Works.

Mississippi Valley Maintenance of Way Club

The November meeting, to be held at 6:30 p.m. on the ninth at the Hotel DeSoto, St. Louis, will feature an address by Martin V. Coffey, general sales manager, Philip Carey Manufacturing Company, on the subject, "Selling America." The last meeting was held on October 12 at the same location with an attendance of 159 members and guests. The program consisted of an address by C. H. Mottier, vice-president and chief engineer, Illinois Central, entitled "Reconstruction of the Illinois Central's Bridge Over the Ohio River at Cairo," which was illustrated by slides. The membership of the club, as of the date of this meeting, was 574.

Roadmasters' Association

A meeting of the Executive committee, to be held under the direction of President H. W. Kellogg, engineer of track, Chesapeake & Ohio (Pere Marquette District), will take place at the Engineer's Club, Chicago, on December 7. The principal item of business on the agenda will be the selection of personnel for the technical committees that will develop reports for presentation at the 1954 convention.

Northwest Maintenance of Way Club

The first regular meeting of the newly formed Northwest Maintenance of Way Club was held on the evening of October

(*Continued on page 1110*)

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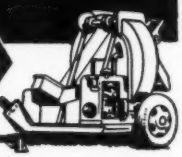

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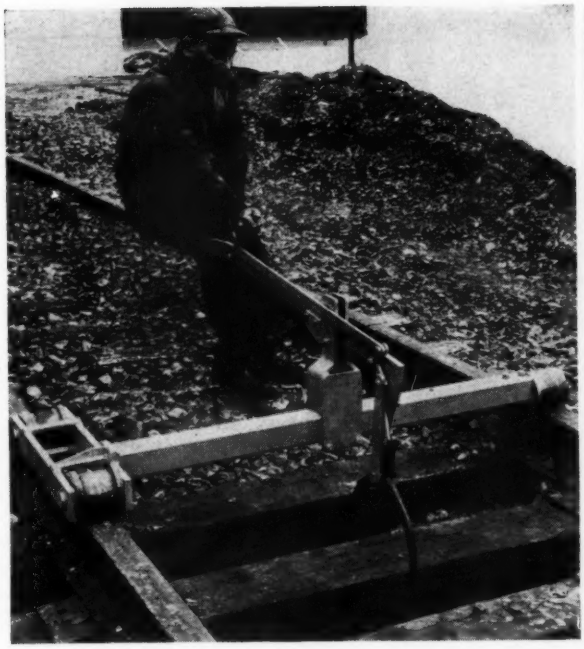

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The nipper will hold a tie against the rail while it is being spiked with pneumatic spiking hammer. Both ends of tie can be nipped up together, or one end at a time. One man can perform the operation, whereas with hand tools, two to four men are required, depending on condition of sub-grade, etc.

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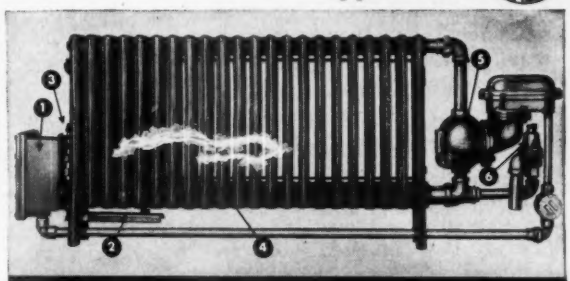

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CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

Association News (Cont'd)

22 at the Midway Civic Club, St. Paul. The principal speaker was W. B. Blix, manager, Railway Equipment division, Nordberg Manufacturing Company, whose subject was: "New Developments in Maintenance of Way Machines."

The next meeting will be held on November 19 at 6:30 p.m. at the same location. The main feature of this meeting will be the showing of a color moving picture depicting construction work in progress on the Quebec, North Shore & Labrador, a line being built to tap rich iron ore deposits in northern Canada. Morris A. Bradley, director of public relations, M. A. Hanna Company, Cleveland, will offer additional commentary and will be available to handle questions.

This new club was formerly brought into being at a meeting held at the Midway Civic Club on September 24. In its activities and objectives, the club will be patterned after similar organizations in New York, Chicago and St. Louis. A total of 134 persons attended the organizational meeting, including 101 railroad men and 33 supply men. Thomas R. Klingel, principal assistant engineer, Soo Line, acted as temporary chairman.

In the election of officers Mr. Klingel was named president. Other officers are: First vice-president—Harold R. Peterson, chief engineer, Northern Pacific; second vice-president—John Gustafson, bridge engineer, Minneapolis & St. Louis; executive secretary—George G. Prest, George G. Prest Company; Secretary-Treasurer—Leo C. Blanchard, roadmaster, Milwaukee Road.

Members of the Executive committee, elected for two-year terms, are: C. J. Freseman, division engineer, Chicago, St. Paul, Minneapolis & Omaha; I. W. McPherson, general manager, Minneapolis, Northfield & Southern; and W. J. Cruse, engineer of track, Great Northern.

Members of the Executive committee to serve for one year are R. J. Moe, Woolery Machine Company; Stan H. Heigh, William Ziegler Company; and F. J. Voss, vice-president and chief engineer, Duluth, Missabe & Iron Range.

Supply Trade News

General

The **L. B. Foster Company**, Pittsburgh, Pa., has announced the establishment of a new office in Los Angeles to serve the West Coast industrial market. The office will be headed by **Henry E. Fleishman**, vice-president.

The **Bucyrus-Erie Company**, Milwaukee, Wis., has announced the appointment of three distributors to handle sales of the firm's ⅜- to 4-yd. shovels, draglines and cranes in their respective areas. They are: **Euclid-Arkansas, Inc.**, North Little

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Supply Trade News (Cont'd)

Rock, Ark.; **General Equipment, Inc.**, Baton Rouge, La.; and **Graze-Dempsey, Inc.**, Jacksonville, Fla.

The **U. S. Steel Supply Division** of the **U. S. Steel Corporation,** Chicago, has been appointed distributor for **A. O. Smith** welding products in the West Coast area. This distributor has warehouse facilities at Los Angeles, San Francisco and Portland, Ore. The Supply Division also distributes A. O. Smith welding products in Chicago, Pittsburgh, St. Paul, St. Louis, Baltimore, Newark and Boston.

Personal

Wilmot Sandham has been appointed Southwestern regional manager for the **Cummins Engine Company, Inc.**, with headquarters at Los Angeles, Cal.

I. P. Payne has been named manager of the newly formed Industrial Power Division sales department of the **International Harvester Company**, Chicago. **W. M. Holland** and **C. E. Jones** have been named assistant managers of sales to assist Mr. Payne.

Gordon W. Rowand, district representative for the **Link-Belt Speeder Corporation** in Illinois, Michigan and Indiana, has been named assistant sales manager of the corporation.

Mr. Rowand joined Link-Belt Speeder in 1946 in the assembly department and

Gordon W. Rowand

was later appointed field service engineer. He served as district representative in the Pacific Northwest prior to his appointment in the Midwest.

Forest S. Burtch has been appointed product sales manager for the newly formed construction materials department of the **John A. Roebling's Sons Corporation,** a subsidiary of the **Colorado Fuel & Iron Corp.**, with headquarters at Trenton, N. J. **Elmer A. Trask** has been named to succeed Mr. Burtch as wire rope sales manager.

Jack C. Bever has been appointed district representative for the **Frank G. Hough Company,** Libertyville, Ill., to work on sales and promotion of "Pay-Loader" tractor-shovels and tractors in the sales district comprising the District of Columbia, Maryland, Virginia, West Virginia and the Carolinas. **Dwain Richey** has been named district representative for the territory of Arkansas, Louisiana, Oklahoma, Texas and New Mexico.

N. M. Sedgwick, general sales manager of the Construction and Mining division of the **Le Roi Company,** Milwaukee, Wis., has been appointed general manager of the newly formed Le Roi-Transo division created for the manufacture of front-end loaders and truck-mounted mixers. **W. D. Lund** has been appointed assistant general manager of the new division. **R. H. Rodolf** has been named general sales manager of the Construction and Mining division, replacing Mr. Sedgwick, and **A. J. Jensen** has been appointed assistant to the general sales manager. **C. L. Meigs** has been named manager of portable compressor sales.

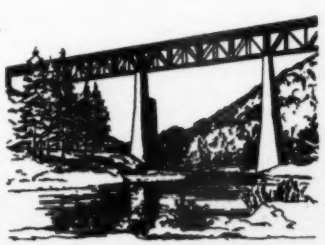
Trade Publications

(To obtain copies of any of the publications mentioned in these columns, use postcards, page 1097.)

Track Maintenance—A new four-page two-color bulletin describing McWilliams track maintenance equipment has been published by the Railway Maintenance Corporation. Included in the booklet are action photographs and details on five track maintenance machines: The McWilliams Tie Tamper, Ballast Distributor, Crib Cleaner, Mole and Super Mole.

Portable Generators—A new 4-page, 2-color catalog describing Homelite carryable generators designed to supply emergency electric power when storms, fires, floods or accidents disrupt normal power supply, has recently been issued by the Homelite Corporation. This booklet explains the various functions and uses of the firm's lightweight, gasoline-engine-driven generators and also includes a section on specifications, electric output, and prices of five of its most popular models.

Sanding Facilities—The Ross & White Co. has recently issued a 12-page, 2-color booklet designated Bulletin No. 89, describing the firm's complete line of sand handling equipment and structures. Pictured and described in the new booklet is the diesel locomotive sanding installation at the Southern's Ernest Norris yard and descriptions of equipment such as sand dust arrestors, sand loading valves, sand dryers, automatic sand handling and storage plants, steam locomotive sanders, and steam sand dryers. Typical installation photographs, specifications and detailed drawings of each piece of equipment are included.



Truck Cranes—A "picture-book" of on-the-job views of 6-ton Lorain TL-10 truck crane installations has recently been made available by the Thew Shovel Company. Entitled "The Thew-Lorain TL-10 Truck Crane at Work," the booklet presents full-page pictures and job data on the machine. Information on the type of new or used trucks used in each instance pictured for mounting the TL-10's is also included. A variety of front-end equipment is also shown.

Generating Plants—"Measurement Factors of a Company and Its Product" is the title of a new 4-color, 40-page institutional brochure being offered by D. W. Onan & Sons, Inc., The plastic-bound booklet contains more than 120 photographs which tell the story of Onan products—what they are and how they are manufactured. Production facilities and methods are described and illustrated and two pages of the booklet are devoted to illustrations showing Onan's world-wide distributor, dealer, and service outlets. Application photographs depict the range of uses for the company's product.

Track Tools—The Warren Tool Corporation has recently made available its new catalog of railroad maintenance tools. The eight-page, two-color book pictures all of the firm's alloy steel track tools, open hearth carbon steel track tools and gives specifications and working drawings describing proper maintenance and use of tools.

Track Drainage—"Save Failing Undertrack Structures" is the title of a new bulletin recently published by Armco Drainage & Metal Products, Inc. The four-page, two-color folder tells in pictures and words how lining failing arches, culverts and other drainage openings with corrugated metal structures saves costs of complete replacement and lengthens the life of such structures without disturbing the roadbed and interfering with traffic. The bulletin details a variety of shapes and sizes of corrugated metal structures and describes how these are installed. It also offers the Armco construction service, which allows the purchase of construction products on an installed basis.

Crawler Tractors—The Caterpillar Tractor Company has recently issued a new publication entitled "Caterpillar Diesel D6 Tractor." The 32-page booklet, with photographs and model cutaways of the basic components of the D6 track-type tractor, describes what goes into the making up of each component. The booklet is highlighted by a double-page detailed cutaway of the D6 tractor. In addition to a specification sheet and attachment list, the booklet suggests other equipment that may be used with the D6 tractor. The new booklet, designated as form No. 30379, also points out the advantages to be obtained with the D6 insofar as operator safety and comfort are concerned and points out the fact that such features result in higher production.

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Full 6" lift—highest of any surfacing jack. Minimum toe height 1½". Eliminates ballast removal; less digging in under-tie work. Trips from right or left. Improved safety thumb guard. Capacity 15 tons; weighs only 28 lbs.
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SIMPLEX A17
Capacity 15 tons; weighs only 41½ lbs. 13" lift.

Simplex LEVER • SCREW • HYDRAULIC Jacks

Write for Bulletin: Track 49

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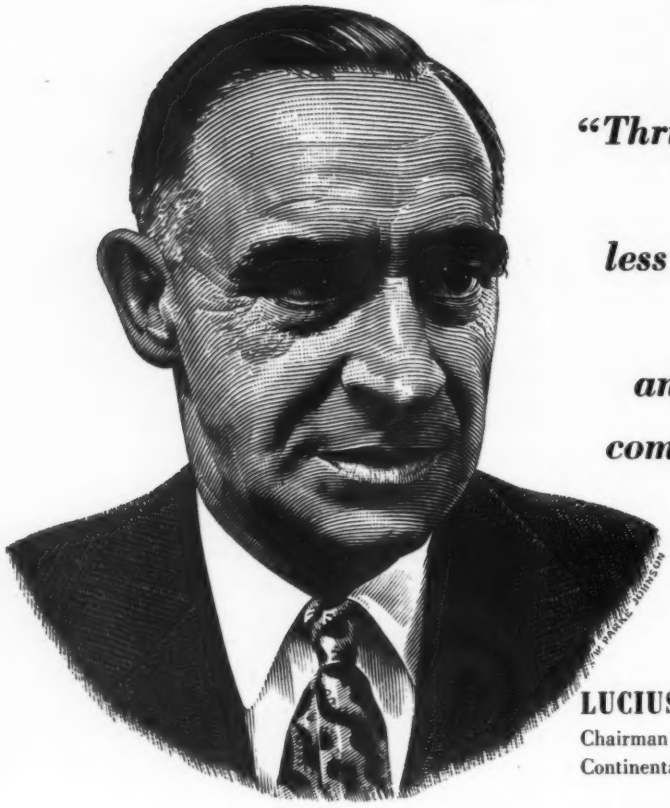

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LUCIUS D. CLAY
Chairman of the Board
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